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The *cholam* mite - *Oligonychus (Paratetranychus) indicus* Hirst and its control *

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Synopsis: In an experiment conducted against the mite, *Oligonychus indicus* Hirst., on *cholam* with modern synthetic pesticides, Metasystox 0·1% has been found to be the most effective chemical which is followed by sulphur dust.

Introduction: The mite, *Oligonychus indicus* Hirst., is one of the important pests of *cholam* which causes damage to the leaves even from the early stages. It has a wide distribution all over India and in the Madras State it is a serious problem in Coimbatore, North Arcot, Salem and Madurai districts. In Coimbatore district this mite is found both in *Chithrai cholam* which is an irrigated crop grown during March to June and *Periyamanjal cholam* which is rainfed and grown during August to November. The mite attacks the crop during March to May in the irrigated crop and August to November in the rainfed crop. In this paper an attempt has been made to give a brief account of the control of the mite with the more recent synthetic chemicals.

Previous work: During the past decade a number of non-oil acaricides has been developed and used for the control of citrus red-mite. Ovex was found to produce control improved over previous meterials and therefore, was extensively used either alone, when mite populations were low at treatment time or in combination with Aramite to moré rapidly reduce high adult mite populations. Demeton was found useful in the control of *Panonychus citri* (McGregor) but varied in effectiveness according to seasonal conditions. The use of Aramite has been restricted by tolerance limitations and therefore the newly developed 'Kelthane' has become the main non-oil material for control of citrus red mite in districts where mites are resistant to phosphates and ovex (Jepson & Carman 1960).

Cherian (1933) recommends pulling out and destruction of the affected plants, keeping the bund clean of grasses and dusting sulphur to eliminate the pest. Trials conducted by him at Coimbatore revealed that sulphur dust, fish oil rosin soap and crude oil emulsion were good against mites and did not cause scorching of the leaves.

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Materials and Methods: A preliminary trial was laid out in randomised plots replicated thrice in a field attached to the Central Farm, Agricultural College, Coimbatore, growing fodder *cholam (Periyamanjal*-Co 4., rainfed). The experiment consisted of seven treatments, viz., (1) parathion 0·025%, (2) Metasystox 0·1%, (3) Aramite 0·1%, (4) Sulphur W. P. O. 1%, (5) mere water spray and (6) Sulphur dust (20 lb/acre) and (7) control (no treatment). The distribution of the mites was more or less uniform in the field and the plots measured 23' x 25' gross and 20' x 22' net. The treatments were given on 29—9—'61 after recording the initial level of mite population on five leaves per plot selected at random. The counts on the mite population and the number of eggs present were estimated in a square inch area on each of the affected leaves with the help of a hand lens. Counts were taken 24, 48 and 72 hours, a week and a fortnight after treatment. The data gathered have been statistically analysed.

Results: The results show that there is a significant reduction at 1% level in the population of mites in all the plots treated with the chemicals. The reduction is high in parathion, Metasystox and sulphur dust in 24 and 48 hours after treatment. However, after 72 hours the population gradually increased in the parathion-treated plots (Table 1). With the lapse of two weeks after the application of insecticides there is a sudden significant reduction of the mite population from that recorded after a week. Among the insecticides, Metasystox has been found to be the most efficacious in controlling the pest as the population gradually decreased ultimately leading to the total absence of mites two weeks after treatment. Aramite spray has also recorded considerably lesser number of mites two weeks after spraying but when the mean population of units is taken into consideration sulphur dust and parathion spray come next to Metasystox which are on a par with sulphur spray and more effective than Aramite spray.

Discussion: In Metasystox treated plots the population gradually decreased and a fortnight after spraying no mite was present on the crop whereas in the other plots mites were found. The most efficacious nature of the chemical over the other insecticides can be attributed to the fact that it is a systemic insecticide. Precaution must however be taken in the application of Metasystox uniformly over the plants, for it may cause scorching of leaves if the spray fluid accumulates in the axils of leaves. In the present experiment no such effect was noticed as the spray was applied uniformly. Next to Metasystox, sulphur dust has been found effective in controlling the mite which is the standard remedy advocated by the Department. As regards parathion, eventhough there is a sudden reduction in the population, it increases gradually two days after spraying and

this may probably be due to the subsequent hatching of eggs, as parathion is reported to have little or no ovicidal action. Though the sprays of sulphur and Aramite were found to reduce the population to some extent they were not as effective when compared to the above chemicals. All the insecticides are of decided advantage over water spray and control. None of the insecticides showed ovicidal action.

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REFERENCES

Cherian, M. C. 1933 The cholam mite. *Madras agric. J.* **21**: 1-7.

Jepson, L. R. and G. E. Carman 1960 Citrus Insects and mites. *Annual Review of Entomology*, Vol. V., p. 353—71.

TABLE I.

Counts of mite population on cholam (in number) before and after treatment.

Treatments	Replication	Periods of counting					
		Initial I	24 hours after II	48 hours after III	72 hours after IV	A week after V	Two weeks after VI
Parathion (Folidol)	I	415	5	23	258	635	300
0·025% spray	II	663	5	0	95	383	215
	III	495	5	0	0	705	234
Metasystox 0·1% spray	I	559	10	0	5	9	0
	II	421	35	3	85	5	0
	III	256	5	32	22	35	0
Aramite 0·1% spray	I	673	252	54	288	241	3
	II	321	164	789	877	38	15
	III	83	485	420	526	140	195
Sulphur 0·1% spray	I	496	111	169	38	290	4
	II	767	176	80	37	28	155
	III	401	160	401	458	736	613
Water spray	I	339	312	572	360	150	52
	II	987	770	352	280	302	30
	III	498	1174	803	601	530	514
Sulphur dust	I	853	380	173	85	115	0
	II	353	130	136	340	235	3
	III	228	136	135	128	547	215
Control	I	673	1647	825	1165	325	19
	II	1619	726	813	1145	864	35
	III	302	426	921	376	220	307

Analysis of variance :—

Source	D/F	SS	MS	F	
Replications	2	40104	20052	—	
Periods	5	1736095	347219	5·27**	
Insecticides	6	4169216	694869	10·54**	
Periods and Insecticides.	30	2953994	98466	1·49	Not significant.
Error	82	5406985	65939		
Total	125	14306394			

** — Significant at 1% level.

Summary of results :—

(1) Comparison of Recordings :—

Recordings	Mean population	S. E. of Mean	C. D.
I Initial	542·95		
II 24 hours after	338·76		
III 48 hours after	319·10	56·04	157·69
IV 72 hours after	341·38		
V A week after	311·10		
VI Two weeks after	138·52		

Conclusion :— VI, V, III, II, IV, I

(2) Comparison of Insecticides :—

Insecticides	Mean population of units	S. E. of Mean	C. D.
1. Parathion 0·025% (Folidol)	246·44		
2. Metasystox 0·1%	82·33		
3. Aramite 0·1%	309·11		
4. Sulphur 0·1%	284·44	60·53	170·32
5. Water spray	479·22		
6. Sulphur dust	232·89		
7. Control	689·33		

Conclusion :— 2, 6, 1, 4, 3, 5, 7