

Insecticidal Control of *Surulpoochi* (*Stomopteryx subsecivella* Zell) on Groundnut*

by

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Synopsis: *Surulpoochi* *Stomopteryx subsecivella* Zell on groundnut was effectively controlled by spraying either Endrin 0.02 per cent, BHC 0.05 per cent or Parathion 0.025 per cent thrice during the crop growth at tri-weekly intervals. Of the four dust formulations tried, dusting Dieldrin 1.5 per cent thrice at the rate of 20 lb. per acre proved effective.

Introduction: Among the pests of groundnut, *Surulpoochi* (*Stomopteryx subsecivella* Zell) is a major one next to red-hairy caterpillar (*Amsacta albistriga* M.) in causing severe damage to the crop. It is a small dark-headed greenish caterpillar which mines into the young leaves and folds and brings together adjacent leaves, feeds on the leaf tissue and hence known as *Surul* or *Mudupoochi* (Ramakrishna Ayyar, 1940). Attempts have been made to control the insect and dusting DDT 5 per cent at the rate of 20 lb. per acre has been found effective in bringing down the pest incidence (Anon. 1947 and 1953). The aerial spraying conducted during 1963 summer in Kurnool district (Andhra Pradesh) revealed the efficacy of Endrin in controlling the pest (Krishnamurthi Rao *et al.*, 1963). In the observational insecticidal trial for the control of *Surulpoochi* conducted at the Regional Research Station, Tindivanam, during 1962-'63 rainfed season, Endrin 0.02 per cent spray effectively checked the pest incidence and registered high yield with maximum net profit (Vittal *et al.*, 1964). With the object of comparing these chemicals with new insecticides like Parathion, Dieldrin and Aldrin, trials were conducted on the rainfed and summer crops of 1963-'64 at the Regional Research Station, Tindivanam.

Materials and methods: The experiments were laid out in simple randomised blocks with four replications. In both the seasons the short duration bunch strain TMV. 2 was used. In rainfed season, the plot size was 16' x 27' gross and 14' x 25' net and the spacing 6" x 6". During summer, 9" x 6" spacing was adopted in a plot size of 19' x 14' gross and 16' x 12' net. In both the seasons, the following nine treatments were tried:

- | | |
|-------------------------------|-----------------------------------|
| 1. DDT 5 per cent dust | } at the rate of 20 lb. per acre. |
| 2. BHC 10 per cent dust | |
| 3. Dieldrin 1.5 per cent dust | |
| 4. Aldrin 2.0 per cent dust | |

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5. DDT 0.1 per cent spray ... 1 lb. of DDT 50 per cent W. P. in 50 gallons of water.
6. BHC 0.05 per cent spray ... 1 lb. of BHC 50 per cent W. P. in 13 gallons of water.
7. Endrin 0.02 per cent spray... 1 oz. of Endrin in 6½ gallons of water.
8. Parathion (Folidol) 0.025 per cent ... 1 oz. of Folidol in 12½ gallons of water.
9. Control ... Untreated.

Three rounds of sprayings were given to the rainfed crop at tri-weekly intervals commencing from the fourth week stage of the crop. As the pest appeared very late in summer (about seven weeks after sowing) only two rounds of sprayings could be taken up for the irrigated crop. The pest population *viz.*, larvae and pupae present on 25 plants selected at random in each plot was recorded initially before taking up first spraying and then subsequently 72 hours after each round of spraying. The plot-war yield of pods was also recorded.

Results and discussion : Both the pest population data (initial and post treatment counts) and the yield data were subjected to statistical analysis and the results are given in the Tables I and II respectively.

TABLE I

Effect of insecticidal treatments on Surulpoochi.

S. No.	Treatments	1963-'64 Rainfed mean pest population	1964 Summer mean pest population
1.	DDT 5 per cent dust	287.75	13.25
2.	BHC 10 per cent dust	266.25	14.00
3.	Dieldrin 1.5 per cent dust	252.00	11.00
4.	Aldrin 2.0 per cent dust	292.00	15.00
5.	DDT 0.1 per cent spray	300.00	14.25
6.	BHC 0.05 per cent spray	229.00	14.00
7.	Endrin 0.02 per cent spray	279.00	13.25
8.	Parathion 0.025 per cent spray	199.75	9.00
9.	Control	432.25	27.75
	Whether significant for 'F' test P=0.05	Yes	Yes
	Standard error	3.97	0.586
	Critical difference	11.0	1.624

Conclusions: Rainfed: 8, 6, 3, 2, 7, 1, 4, 5, 9

Summer: 8, 3, 7, 1, 6, 2, 5, 4, 9

Incidence of Surulpoochi: The pest appeared in larger numbers on the rainfed crop compared to the summer crop. All the insecticidal treatments have recorded significant lesser incidence of the pest than the untreated control in both the trials. In the rainfed season, Parathion (Folidol) 0.025 per cent spray stood first followed by BHC 0.05 per cent spray, Dieldrin 1.5 per cent dust and BHC 10 per cent dust in effectively controlling the pest. Endrin 0.02 per cent spray, DDT 5 per cent dust, Aldrin 2.0 per cent dust and DDT 0.1 per cent spray were on a par with each other. In the summer trial, Parathion (Folidol) 0.025 per cent spray and Dieldrin 1.5 per cent dust ranked first and second followed by Endrin 0.02 per cent spray, DDT 5 per cent dust, BHC 0.05 per cent spray, BHC 10 per cent dust, DDT 0.1 per cent spray and Aldrin 2 per cent dust which were on a par with each other in reducing the pest incidence.

TABLE II

Effect of insecticidal treatments on yield of pods.

S. No.	Treatments	1963-'64 Rainfed		1964 Summer	
		Hectare yield in kg.	Percentage over control	Hectare yield in kg.	Percentage over control
1.	DDT 5 per cent dust	787	142.9	1566	125.0
2.	BHC 10 per cent dust	876	162.9	1737	138.7
3.	Dieldrin 1.5 per cent dust	945	175.7	2248	179.5
4.	Aldrin 2.0 per cent dust	930	172.9	1812	144.6
5.	DDT 0.1 per cent spray	815	151.5	1922	153.4
6.	BHC 0.05 per cent spray	938	174.3	2085	166.4
7.	Endrin 0.02 per cent spray	945	175.7	2359	188.2
8.	Parathion 0.025 per cent spray	938	174.3	2116	169.0
9.	Control	538	100.0	1253	100.0
	Standard error	80.5	15.0	47.2	3.7
	Whether significant by 'F' test				
	P=0.05		Yes		Yes
	Critical difference	235.0	43.7	137.4	10.96

Conclusions: Rainfed: 7, 3, 8, 6, 4, 2, 5, 1, 9

Summer: 7, 3, 8, 6, 5, 4, 2, 1, 9

2. *Yield of pods*: In the rainfed season, all the insecticides except DDT 5 per cent dust registered significant higher yields, ranging from 51.5 to 75.7 per cent over untreated control. Among the eight treatments used which are on a par with each other, Endrin 0.02 per cent spray, Dieldrin 1.5 per cent dust, Parathion (Folidol) 0.025 per cent spray and BHC 0.05 per cent spray ranked first, second, third and fourth respectively in recording

increased yields. In summer, all the eight treatments recorded significantly higher yields, ranging from 25.0 to 88.2 per cent over untreated control. The same four insecticides mentioned above in the rainfed trial occupied the first four places in summer trial also and the trend of results was alike in both the seasons.

3. *Economics of treatments*: The economics of treatments was worked out for both rainfed and summer crops and the details are given in the Tables III and IV.

TABLE III
Economics of treatments - 1963-'64 - Rainfed

S. No.	Treatments	Gross income (value of pods+ haulms) per acre		Cost of cultivation per acre		Cost of insecticides & cost of application per acre		Total expenditure per acre		Net profit per acre	
		Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.
1.	DDT 5 per cent dust	207	03	132	12	19	40	151	52	55	51
2.	BHC 10 per cent dust	235	92	132	12	11	77	143	89	92	03
3.	Dieldrin 1.5 per cent dust	254	46	132	12	34	96	167	08	87	38
4.	Aldrin 2.0 per cent dust	250	37	132	12	23	98	156	10	94	27
5.	DDT 0.1 per cent spray	219	34	132	12	16	94	149	06	70	28
6.	BHC 0.05 per cent spray	252	46	132	12	19	34	151	66	100	80
7.	Endrin 0.02 per cent spray	254	52	132	12	24	86	156	98	97	54
8.	Parathion 0.025 per cent spray	252	50	132	12	23	85	155	97	96	53
9.	Control	145	12	132	12	...		132	12	13	00

TABLE IV
Economics of Treatments - 1964 Summer

S. No.	Treatments	Gross income (value of Pods+ haulms) per acre		Cost of cultivation per acre		Cost of insecticides & cost of application per acre		Total expenditure per acre		Net Profit per acre	
		Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.
1.	DDT 5 per cent dust	447	77	254	87	12	93	267	80	179	97
2.	BHC 10 per cent dust	495	18	254	87	7	85	262	72	232	46
3.	Dieldrin 1.5 per cent dust	628	96	254	87	23	31	278	18	350	70
4.	Aldrin 2.0 per cent dust	514	37	254	87	15	99	270	86	243	51
5.	DDT 0.1 per cent spray	543	10	254	87	11	29	266	16	276	94
6.	BHC 0.05 per cent spray	586	90	254	87	12	89	267	76	319	14
7.	Endrin 0.02 per cent spray	659	80	254	87	16	57	271	44	388	36
8.	Parathion 0.025 per cent spray	594	77	254	87	15	90	270	77	324	00
9.	Control	361	57	254	87	...		254	87	106	70

In the rainfed season, BHC 0.05 per cent spray has given the highest net profit of Rs. 100-80 P. Sprays of Endrin 0.02 per cent and Parathion 0.025 per cent stand second and third with a net profit of Rs. 97-54 P. and Rs. 96-53 P. respectively. In the summer trial, Endrin 0.02 per cent spray has given the highest net profit of Rs. 388-36 P. Dieldrin 1.5 per cent dust comes next with a net profit of Rs. 350-78 P. followed by sprays of Parathion 0.025 per cent and BHC 0.05 per cent with a net profit of Rs. 324=00P. and Rs. 319-14 P. respectively.

Summary: The results show that in the rainfed trial, Parathion 0.025 per cent, BHC 0.05 per cent, Dieldrin 1.5 per cent dust and Endrin 0.02 per cent spray proved effective in controlling *Surulpoochi* as well as in recording increased yields with higher net profit. In summer trial also, the same four insecticides manifested lesser incidence of the pest and higher yields with maximum net profit.

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