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## Studies on the Control of the Castor Semilooper, *Achaea janata* Linn

by

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**Introduction:** Among the insect pests of castor plant, *Ricinus communis* L., the castor semilooper, *Achaea janata* L., is of major importance causing considerable damage to the crop. The first instar larva nibbles the epidermis of the leaves while the later instars completely defoliate the plants leaving only the veins. The full-grown caterpillar measures 55 mm. to 60 mm. in length and occurs in a wide variety of colour patterns. Field experiments on the control of this pest were conducted at the Agricultural College and Research Institute, Coimbatore during 1964 and 1965 with new insecticides and their results are presented.

**Review of Literature:** Ayyar (1935) recommended prompt hand picking of caterpillars in mild cases and the application of stomach poisons like calcium arsenate or lead arsenate either in dust or spray form when they appeared in large numbers. Vevai and Talgeri (1948) have stated that three to four sprayings of 0.15 per cent DDT water suspension or dusting of 5 per cent DDT (Guesarol 405) at 20 days interval would control the

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castor semilooper. BHC 10 per cent dust and Agroside cotton dust were effective against the young caterpillars, while BHC 0.1 per cent spray caused an appreciable mortality of the grown up ones (Anonymous, 1952). Dusting with 5 per cent BHC or spraying with any stomach poison has been reported to give good control of *Achaea janata* by Trehan (1956). Trials conducted at Coimbatore revealed that Folidol 0.05 per cent and Endrin 0.05 per cent sprays were effective in control of the semilooper (Anonymous, 1964). Precha *et al.* (1962) found Sevin 0.02 per cent to 0.05 per cent to control this pest in Thailand. Khan (1964) holds the view that application of BHC, DDT, Endrin or Folidol will control this insect effectively.

**Material and Methods:** Two insecticidal trials were laid out during the years 1964 and 1965 with ten treatments *viz.*, (1) Parathion 0.05 per cent spray, (2) Malathion 0.1 per cent spray, (3) Endrin 0.02 per cent spray, (4) Carbaryl 0.1 per cent spray, (5) Carbaryl 10 per cent dust, (6) BHC 10 per cent dust, (7) Imidan 2 per cent dust, (8) Trithion 2 per cent dust, (9) Dipterex 5 per cent and (10) untreated control on TMV. 3 castor in randomised blocks, replicated three times.

Initial population counts were taken in respect of ten plants per plot selected at random when the incidence of the semilooper was at its peak. Similar population counts were taken 24 hours, 72 hours, one week after treatment (Table 1). The percentage of reduction in each treatment was worked out and the data of both trials were pooled and statistically analysed to find out the efficacy of the insecticides in controlling this pest.

TABLE 1. *Insecticidal trial against the castor semilooper, Achaea janata Coimbatore*

| Treatment No. | Active ingredient (kg/ha) | Population of castor semilooper |      |                          |      |                          |      |                          |      |                           |      |
|---------------|---------------------------|---------------------------------|------|--------------------------|------|--------------------------|------|--------------------------|------|---------------------------|------|
|               |                           | Initial population              |      | 24 hours after treatment |      | 72 hours after treatment |      | One week after treatment |      | Two weeks after treatment |      |
|               |                           | 1964                            | 1965 | 1964                     | 1965 | 1964                     | 1965 | 1964                     | 1965 | 1964                      | 1965 |
| 1.            | 0.560                     | 76                              | 661  | 3                        | 34   | 3                        | 3    | 3                        | —    | 3                         | 3    |
| 2.            | 2.242                     | 66                              | 1168 | 10                       | 154  | 4                        | 5    | 2                        | —    | 5                         | 2    |
| 3.            | 0.226                     | 62                              | 495  | 10                       | 27   | 1                        | —    | 6                        | —    | 6                         | 2    |
| 4.            | 1.130                     | 65                              | 448  | 17                       | 14   | 7                        | —    | 5                        | —    | 5                         | —    |
| 5.            | 2.50                      | 77                              | 766  | 24                       | 7    | 9                        | 2    | 7                        | —    | 7                         | 1    |
| 6.            | 0.013                     | 70                              | 899  | 29                       | 163  | 17                       | 6    | 11                       | 1    | 10                        | 1    |
| 7.            | 0.452                     | 59                              | 470  | 25                       | 148  | 13                       | 5    | 8                        | 1    | 5                         | 1    |
| 8.            | 0.452                     | 65                              | 676  | 19                       | 184  | 9                        | 3    | 4                        | 2    | 6                         | —    |
| 9.            | 1.130                     | 77                              | 756  | 18                       | 124  | 10                       | 6    | 8                        | 4    | 7                         | —    |
| 10.           | —                         | 60                              | 815  | 53                       | 313  | 43                       | 22   | 24                       | 1    | 27                        | 2    |

\*\* Significant at 1 per cent level.

**Results:** All the insecticidal treatments were highly significant over control in controlling the semilooper. Parathion 0.05 per cent spray gave high reduction of the semilooper and was superior to all the other treatments. Endrin 0.02 per cent spray and carbaryl 0.1 per cent spray were on par with Parthion 0.05 per cent spray in reducing the population of semiloopers (Table 2). The control of the pest by the different insecticides was found to be maximum at one week and two weeks after treatment rather than 24 hours and 72 hours after treatment.

TABLE 2. *Summary of Results (Treatments)*

| Treatments                       | Mean reduction<br>(Transformed) | S. E. of<br>mean | C. D.<br>P = 0.05 |
|----------------------------------|---------------------------------|------------------|-------------------|
| 1. Parathion 0.05 per cent spray | 83.63                           | 1.25             | 3.89              |
| 2. Malathion 0.1 per cent spray  | 77.72                           |                  |                   |
| 3. Endrin 0.02 per cent spray    | 80.08                           |                  |                   |
| 4. Carbaryl 0.1 per cent spray   | 79.84                           |                  |                   |
| 5. Carbaryl 10 per cent dust     | 77.42                           |                  |                   |
| 6. B. H. C. 10 per cent dust     | 70.46                           |                  |                   |
| 7. Imidan 2 per cent dust        | 70.76                           |                  |                   |
| 8. Trithion 2 per cent dust      | 74.30                           |                  |                   |
| 9. Dipterex 5 per cent dust      | 75.43                           |                  |                   |
| 10. Control                      | 55.73                           |                  |                   |

Conclusion: 1 3 4 2 5 9 8 7 6 10

*Summary of Results (Period)*

| Periods<br>(counts) | Mean reduction<br>(Transformed) | S. E. of mean | C. D. |
|---------------------|---------------------------------|---------------|-------|
| 1. 24 hours         | 61.52                           | 0.79          | 2.21  |
| 2. 72 hours         | 77.01                           |               |       |
| 3. One week         | 80.23                           |               |       |
| 4. Two week         | 79.37                           |               |       |

Conclusion: 3 4 2 1

The apparent high reduction in the caterpillar population in the control plots in 1965 trial was due to the fact that the caterpillars had migrated after completely defoliating the plants. However, the reduction in treated plots was entirely due to mortality resulting from insecticidal action and this was much more than in the control plots.

**Conclusion:** The two insecticidal trials conducted during 1964 and 1965 have revealed that Parathion 0.05 per cent spray can best be utilised for effective control of the castor semilooper, *Achaea janata*.

**Cost of treatment:** The cost of one round of treatment with Parathion 0.05 per cent spray on one acre of castor crop works out to Rs. 7.19.

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\* Original not seen.