INTERNATIONAL JOURNAL OF AGRICULTURE & BIOLOGY
1560–8530/2000/02–4–340–341

# Efficacy of Some Pre-Mixed Insecticides Against Insect Pest Complex of Cotton Crop

QASIM ALI KHAN, M. SAQIB, M. UMAR, A. SALIM AND MUHAMMAD TARIQ KHALID
*Plant Protection Institute, Faisalabad, Pakistan*

## ABSTRACT

Deltaphos 10+350EC (Deltamethrin + Triazophos), Azocord 44 EC (Cypermethrin + Monocrotophos), Azofas 42 EC, (Alphamethrin + Monocrotophos) Cytac 24 EC (Cypermethrin + Amitraz), Laser 25 EC (Cypermethrin + Dimethoate) and Polytrin-C 440 EC (Cypermethrin + Profenofos) applied four times in the recommended doses against insect pest complex of cotton crop during 1996, revealed 96.67-100.00% and 91.02-95.57% mortality of thrips, jassid and whitefly in the above pesticides, respectively. Similarly, the treatments gave 91.01-94.64% reduction in infestation of cotton bollworms. There was no significant difference among the products for controlling sucking insect pets and bollworms.

**Key Words:** Pre-mixed insecticides; Insect pest complex; Cotton

## INTRODUCTION

About 96 insect pests attack cotton crop (Yunus *et al.,* 1981). Among these pests, jassid (*Amrasca devastans* Dist.), Whitefly (*Bemisia tabaci* Genn.) thrips (*Thrips tabaci* Lind.), aphid (*Aphis gossypii* Glove.), spotted bollworms (Earias spp.), Pink bollworm and armyworm (*Spodoptera littoralis* Boised.) are the most serious and destructive to the crop. Sindhu *et al.* (1983) evaluated fenvalerate, permethrin and cypermethrin @ 50 g a.i/ha and Deltamethrin (decamethrin) @ 10 g a.i/ha applying each insecticide 4-5 times at 10 days interval and observed significantly better control of Earias spp. and *Pectinophora gossyppiella* with a higher cotton yield than carbaryl @ 1.25 kg/ha. Srivastava and Gajhiye (1983) conducted field trial against *Earias vitella, Helicoverpa armigera* and *Pectinophora gossypiella* on cotton using 0.012% permethrin, 0.0007% cypermethrin, 0.005% decamethrin, 0.02% fenvalerate, and 0.2% carbaryl @ 500 ml/ha, spraying five times at 10 days interval starting at boll formation stage and found that the pests were effectively controlled at the respective concentrations of pesticides. They also concluded that the seed cotton yield was increased from 0.69 to 1.13-1.46 t/ha. Wan and Wan (1984) studied the effectiveness of Deltamethrin (Decis) for the control of cotton pests and obtained complete control of thrips (*Thrips tabaci*), American bollworm (*Helicoverpa armigera*), pink bollworm (*Pectinophora gossypiella*), aphids (*Aphis gossypii* and *Anomis flava*) (F.) with concentrations of 1, 4, 4, 2 and 2 ppm, respectively.

The present studies were conducted to evaluate six different per-mixed insecticides viz; Deltaphos 10+350 EC (Deltamethrin+ Triazophos), Azocord 44 EC (Cypermethrin + Monoccrotophos), Azofas 42 EC (Alphamethrin + Monocrotophos), Cytac 24 EC (Cypermethrin + Amitraz), Laser 25 EC ( Cypermethrin + Dimethoate ) and Polytrin –C 440 EC (Vypermethrin + Profenofos) against jassid, whitefly, thrips and bollworms of cotton under field conditions to minimize the losses caused by these pests and to increase the production at country level.

## MATERIALS AND METHODS

The experiment was conducted on a private farm on cotton variety CIM-240 sown in May 1996 at Tandlianwala (Faisalabad) following CRBD to seek the efficacy of pre-mixed insecticides i.e, Deltaphos 10+350 EC (Deltamethrin + Triazophos, Azocord 44EC (Cypermethrin + Monocrotophos), Azofas 42EC (Cypermethrin + Dimethoate) and Ploytrin-C 440 EC (Cypermethrin + Profenofos) @ 1482,1482,2470,2470 and 1482 ml/hectare, respectively against insect pests complex of cotton. The plot size was 15.24 m x 3.35 m. Row to row and plant to plant distance was 0.76 m and 0.22 m, respectively and each treatment was replicated thrice. Four applications were given during the reason on 22$^{nd}$ August and 3$^{rd}$ , 15$^{th}$ and 27$^{th}$ September 1996 at 12 days interval with Solo hand sprayer. Observations on jassid, whitefly and thrips were recorded before and 72 hours after treatment observing 15 leaves of five plants selected at random from each plot. Infestation of bollworms was recorded observing all the fruiting bodies of five plants selected at random per plot before and seven days after treatment. The data were analyzed statistically according to Steel and Torrie (1980). Mortality of sucking pests, rate of infestation along with reduction in bollworms infestation over check were calculated accordingly.

## RESULTS AND DISCUSSION

The data presented in Table I reveal that Deltaphos, Azocord, Azofas, Cytac, Laser and Polytrin-C gave 97.22, 97.43, 100, 100, 100 and 94.87% mortality of jassid, respectively with 94.49, 95.57, 93.34, 91.05, 95.49 and 93.14% respective mortality of whitefly, where as the thrips mortality was 99.61, 100, 97.65, 96.67, 100 and 98.55, respectively.

**Table I. Average mortality of sucking insect pests of cotton**

| | | 72 Hours after application | | |
|---|---|---|---|---|
| **Treatments** | **Dose/hectare** | **Jassid** | **Whitefly** | **Thrips** |
| A | 1482 ml | 97.22a | 94.49a | 99.61a |
| B | 1482 ml | 97.43a | 95.57a | 100.00a |
| C | 1482 ml | 100.00a | 93.34a | 97.65a |
| D | 2470 ml | 100.00a | 91.05a | 96.67a |
| E | 2470 ml | 100.00a | 95.49a | 100.00 |
| F | 1482 ml | 94.87a | 93.14 a | 98.55a |
| Control | Untreated | 0.00b | 0.00b | 0.00b |
| | Cd1 | 7.93 | 5.40 | 3.34 |

**Table II. Average reduction in infestation of bollworms of cotton seven days after application**

| **Treatments** | **Dose/ Hectare (ml)** | **Bollworms infestation (%)** | | **% reduction in infestation over check** |
|---|---|---|---|---|
| | | Pre-treat. | Post treat. | |
| A | 1482 | 12.55 | 2.26a | 92.33 |
| B | 1482 | 12.66 | 1.81a | 93.86 |
| C | 1482 | 13.33 | 1.68a | 94.30 |
| D | 2470 | 12.60 | 2.65a | 91.01 |
| E | 2470 | 12.70 | 2.21a | 92.50 |
| F | 1482 | 12.40 | 1.58a | 94.64 |
| Control | Untreated | 14.76b | 29.49b | - |
| | Cd1 | - | 1.11 | - |

A= Deltaphos 10+350EC (Deltamethrin + Triazophos); B= Azocord 44 EC (Cypermethrin + Monocrotopho); C= Azofas 42 EC (Alphamethrin + Monocrotopho); D= Cytac 24 EC (Cypermethrin + Amitraz); E= Laser 25EC (Cypermethrin + Dimethoate); F= Polytrin-C 440 EC (Cypermethrin + Profenofos); Means sharing similar letters are non-significant at P-0.05.

No mortality of jassid, whitefly and thrips was observed in check plot. All the chemicals were at par for controlling sucking pests, as there is no significant difference among their effectiveness. The present conclusions are not in conformity with Atique and Rashid (1983), Mundiwale *et al*. (1983) and Wan and Wan (1984) as they applied different insecticides other than those used in the present studies. Similarly, the data presented in Table II indicate that 92.33, 93.86, 94.30, 91.01, 92.50 and 94.64% reduction in infestation of bollworms was recorded in Deltaphos, Azocord, Azofas, Cytac, Laser and Polytrin-C, respectively. Gupta and Agarwal (1983), Mundiwale *et al.* (1983), Sindhu *et al.* (1983), Srivastava and Gajhiye (1983), and Wan and Wan (1984) concluded a better control of cotton pests with pesticides like present studies but the results are not in conformity as they used different products. All the chemicals were at par for the control of bollworms as well as there is no significant difference in effectiveness among these.

## REFERENCES

Atique, M.R. and A. Rashid, 1993. Efficacy of pyrethroid pesticides for the control of cotton pests. *Pakistan J. Agric. Res.,* 4: 65.

Gupta, G.P. and R.A Agarwal, 1983. Potcntial of synthetic pyrethroids to control bollworm complex in cotton. *Indian J. Agri. Sci.,* 53: 1051–4.

Mundiwale, S.K, U.B. Maan, V.S. Govindwar and M.N. Borle, 1983. Efficacy of five insecticides alone and in combination with DDT against cotton pests. *Indian J. Entomol.,* 45: 282–5.

Sindhu, A.S., B.S. Chahal, H.S. Sukhija, J.L. Kandoria, J.S. Brar, J. Singh, G. Singh and J. Singh, 1983. Adaptive trials with synthetic pyrethroids for the control of cotton bollworms in the Punjab. *Pesticides,* 17: 13–4.

Srivastava, K.P. and V.T. Gajhiye, 1983. Efficacy of synthetic pyrethroids against the bollworms and their residues in cotton. *Indian J. Agri. Sci.,* 53: 1048–51.

Steel, R.G.D. and J.H. Torrie, 1980. *Principles and Procedures of Statistics,* 2nd Ed. Mcgraw Hill, Koga Kosha Ltd, Tokyo Japan.

Wan, S.Y. and M. Wan, 1984. Preleminary report on controlling cotton insects with DECIS. *Insect knowledge (Kunchong Thishi)*, 19: 25–7.

Yunus, M., M. Yousaf and G. Jilani, 1981. *Insect and spider mite pests on cotton in Pakistan* A Monograph. Univ. Agri. Faisalabad Pakistan, pp. 256.

**(Received 10 September 2000; Accepted 20 September 2000)**