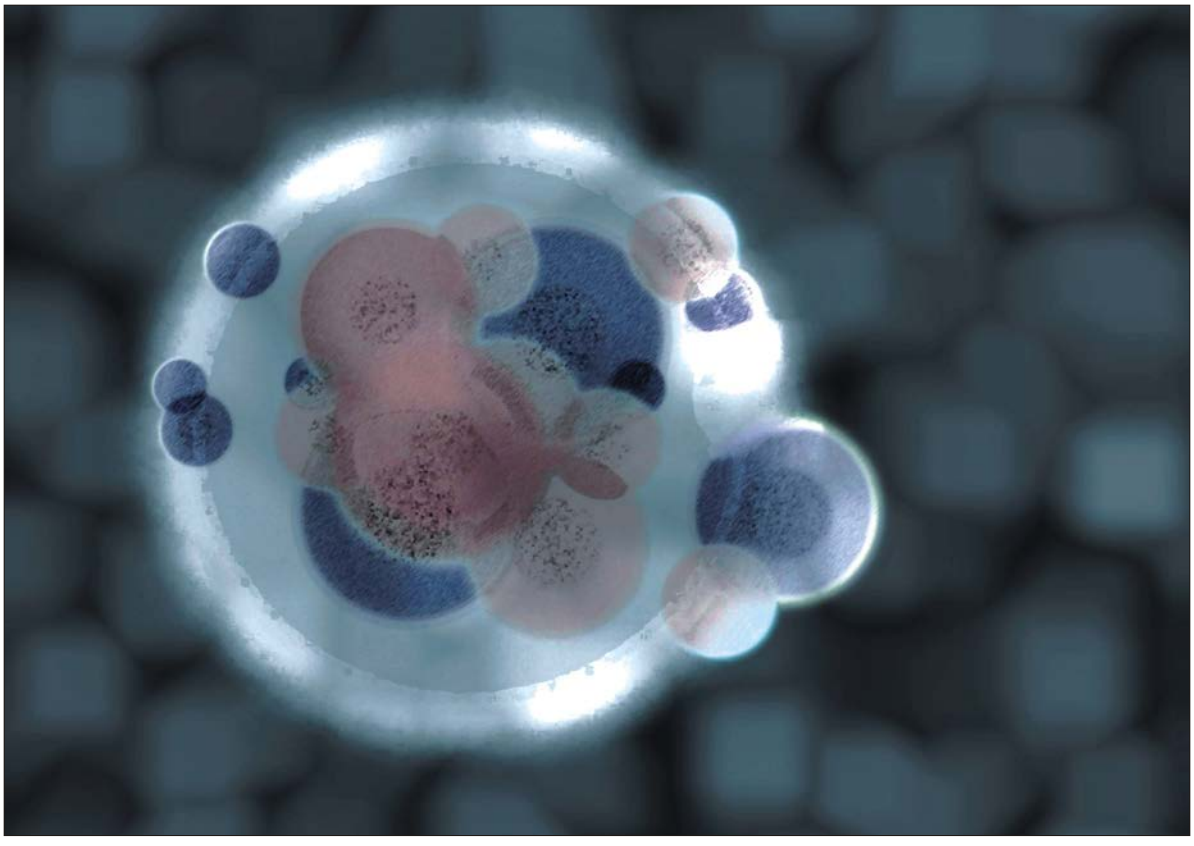

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Some Studies on the Comparative Efficacy of Different Traditional and Non-traditional Insecticides Against Okra Jassid (*Amrasca biguttula biguttula* Ishida) on Okra, Variety "Pusa Green"

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Abstract: Experiment was laid out for evaluating one traditional insecticide (monocrotophos) and four non-traditional insecticides (decarafluron, *Bacillus thuringiensis*, monocrotophos + surfactant and chlorfenapyr) against *okra* jassid *Amrasaca biguttula biguttula* (Ishida). All the test insecticides were found to be effective in controlling okra jassid. However, on numerical basis, the lowest mean value of jassid population (3.75 individuals per leaf) was observed in the test area treated with monocrotophos plus surfactant.

Key words: Comparative efficacy, traditional insecticides, non-traditional insecticides, okra jassid, Pusa Green

Introduction

Okra (an important summer vegetable crop) enjoys its unique position in the diet of human beings. Per acre yield of okra is lower due to many factors including the most important one, i.e. the attack of insect pests. This is enhanced during the decades due to excessive use of insecticides that have resulted the resistance among the insect pests. About 72 species attack on the okra crop (Ewete, 1978). Among these, jassid (*Amrasca biguttula biguttula*) is the most important one. It destroys the crop by sucking the cell sap of the plants. The only quick solution to control the pest is the use of insecticides, which should be non-traditional, as traditional insecticides have failed to achieve their target. Various authors did previous studies on these lines. Singh and Singh (1991) reported that dimathoate at 500 g a.i./ha with cypermethrin at 50 g a.i./ha gave better control of *Amrasca biguttula biguttula*. Mordue and Blackwell (1993) referred *Azadirachta indica* as a strong antifeedent, insect growth regulator and as an elicitor of reproductive effects. Patel *et al*. (1997) found that endosulfan was the most effective against the pests of okra. So focusing all the factors and importance of the crop, the present study was planned to determine the effectiveness and comparison of traditional and non-traditional insecticides on okra, variety Pusa Green.

Materials and Methods

The trial was laid out at Ayub Agricultural Research Institute Faisalabad in a Randomized Complete Block Design (RCBD) with six treatments including a control having three repeats each. The spray materials used are given in Table 1.

With the appearance of the jassid population, the spray operation was started. The population of jassid was recorded from three leaves per plant taking alternatively each from top, middle and bottom (Singh and Kaushik, 1990). So a total of 15 leaves were taken per treatment. There were three sprays, each at fortnight interval. The insect pest population was recorded 24 hours before first treatment, then 24, 48, 72 hours, 7 and 14 days after each treatment. At the end of season, the data, however, were presented in the form of mean values and analyzed statistically by applying Analysis of Variance (ANOVA) technique and Duncan's Multiple Range Test (DMRT) after Steel and Torrie (1980). The comparative efficacy of the test insecticides was considered to be an indirect reflection of the jassid population per leaf basis.

Results and Discussion

The data on a multiple comparison of the mean values for okra jassid in different treatments are presented in Table 2.

The mean value for the population of okra jassid *Amrasaca biguttula biguttula* (Ishida) in different treatments revealed that all of the test insecticdes were found to be effective with significant differences on the basis of overall average but all these treatments differed significantly from check for control of okra jassid *Amrasca biguttula biguttula* (Ishida).

Since the comparative efficacy of different insecticides was considered to be an indirect reflection of the population per leaf. Thus we can say that all the insecticides were effective and gave good control. But the highest value 7.71 individuals per leaf among all the treated plots was found in T_1 with Match 050EC (decarafluron) at 200 ml/ac. While a value of 6.21 individuals per leaf was observed in the area treated with monocrotophos alone. These findings deny the results of Radadia and Patel (1993) who found that fenthion (0.1%) and monocrotophos (0.03%) were the most effective in controlling okra jassid, *Amrasca biguttula biguttula* and *Aphis gossypii* and Upadhyay (1995) who recorded that monocrotophos and methamidophos gave 97.05 and 86.30% mortality of the pests respectively.

However, the lowest mean value 3.75 individuals per leaf was found for the control of okra jassid *Amrasca biguttula biguttula* (Ishida) in T_8 with Azodrin (monocrotophos) + surfacton (surfactant) at 500 + 1000 ml/ac which would suggest that this combination is more toxic to the pest compared with others. This is in agreement with the results of Wolfel and Noga (1993) who studied the characteristics and mode of action of surfactants, used as integral constituents of many pesticides and recommended that surfactant used as combination with pesticides are more toxic than pesticides used alone.

Thus traditional and non-traditional insecticides may be applied

Table 1: Details of different treatments and spray material used

Treat.	Trade Name	Common Name	Formulation used	Dose (a.i.)
T_1	Match 050EC	(decarafluron)	at 200 ml/ac	10 ml/ac
T_2	Agree 50WP	(*Bacillus thuringiensis*)	at 500g/ac	250 ml/ac
T_3	Azodrin 40 SCW	(monocrotophos)	at 500 ml/ac	200 ml/ac
T_4	Azodrin + Surfacton	(monocrotophos + surfactant)	at 500 + 1000 ml/ac	200 + 100 ml/ac
T_5	Pirate 360 g/l	(chlorfenapyr)	at 160 ml/ac	57.6 ml/ac
T_6	Control			

Table 2: Comparative efficacy of different traditional and non-traditional insecticides used

Treatments	Jassid Population per leaf			
	1st Spray	2nd Spray	3rd Spray	Overall
T_1	8.69 b	7.84 b	6.58 b	7.71 bc
T_2	7.87 b	7.35 c	6.19 bcd	7.14 cd
T_3	7.93 b	5.85 e	5.55 cd	6.21 e
T_4	5.86 c	3.45 f	1.92 f	3.75 g
T_5	8.54 b	7.29 c	6.59 b	7.47 bc
T_6	15.42 a	15.13 a	12.09 a	15.08 a

for the effective control of okra jassid, but non-traditional, Azodrin 40SCW + Surfacton (monocrotophos + surfactant) at 500 + 1000 ml/ac proved better due to its increased efficiency and toxicity over traditional insecticides.

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