

# INSECTICIDAL CONTROL OF ERIASFABIA WITH SPECIAL REFERENCE TO OKRA (*ABELMOSCUS ESCULANTUS*)

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**Abstract :** Today organic farming is preferred to save the environment, minimize soil degradation, optimize biological productivity and promote a sound state of health. Non-insecticidal control of pest is a part of this way and integrated pest management (IPM) experimentally NPK and manure oil cakes are used to see effect of infestation and yield of okra and found a positive result.

**Keywords:** Insecticidal, Efficacy, Population, IPM, Infestation.

## I. INTRODUCTION

Vegetables provide a good source of income to the growers and play an important part in human nutrition as laden with essential food elements. In Indian dishes okra (*abelmoscus esculantus*) is very popular which lead to huge demand of their yield. The serious economic loss to the cultivators due to the infestation of *Eariasvitella* Fab. (Lepidoptera : Cymbidae) on okra has been noticed by Das et. Al (1987). The integrated pest management (IPM) is a latest pest population management system that uses all the suitable techniques regarding reduction of injury level and pest control. Sharma and Sharma (2008) reported the chemicalization of agriculture has resulted in the deterioration of soil, health, accumulation of residue in food and reduction in the biodiversity. Therefore the authors used the chemical fertilizer (N.P.K.) and oil cakes as chemical and biological agencies respectively. They used neem, castor and karanj as oil cakes. Among the plant products the neem derivatives had been reported as highly effective crop diseases controlling substance by Jayalaxmi et. al. (2004). K. Eifediyi, H. E. Ahamfele, SU Remison (2015) noticed that NPK, Jatropha cake and organo mineral fertilizer increase plant height, stem girth, number of leaves, fruit weight and fruit yield.

## II. MATERIALS AND METHODS

For the purpose of study trial was done with fertilizers and oil cakes. Studies on effect of fertilizers against the *Eriasfabia* was started in month of March 2007. Four plots of 200 square meters were prepared and okra seed were sown in February in each plot at prescribe distance. Fertilizer i.e. Urea (N), Single super phosphate (P) and Mureate of potash (K) were applied singly in three plot. Urea-2.5kg. in T1 plot, SSP-4kg. in T2 plot and potash-1kg. in T3 plot were applied T4 plot was left untreated. Fertilizers were used in two split doses each half after a month. Fruits were harvested nine times at the intervals of ten days from last of March to June. Each time hundred fruits were harvested at random and the data of the infestation was summarized in table 01 and statistically analysed. To know the significance of this study standard error of difference of means was calculated between T4 at one and T1, T2 and T3 at the other and 't-test' was applied.

Studies on oil cakes against the *Eriasfabia* was made on the okra crop plants in the month of April. The trial was conducted on randomised block design. The oil cakes included in the trial were (I) Neem (*Azadirachta indica*) (ii) Castor (*Ricinus communis*) and (iii) Karanj (*Pongaroia glabra*). The oil cakes were mixed with soil and watered at the time of seedling stage. There were eight treatments in the plot size of 200 sq.ft. each. Three of them being single trials with neem, castor, and karanj. Other four trials were made with various combination of the above oil cakes. Eight plots were left untreated (check).

Doses in the trial:

T1 = 5kg Neem

T2 = 5kg Castor

T3 = 5kg Karanj

T4 = 3kg. Neem +2 kg. Castor

T5 = 2kg. Neem +3kg Castor

T6 = 1kg. Neem +4kg. Castor

T7 = 4kg. Neem + 1kg. Castor

T8 = Untreated (check)

Collections were made on every 10<sup>th</sup> day from March to June. Each time 100 fruits were harvested. Number of infested fruits from each harvest of the plots were counted and recorded in tabular forms (Table-3). Finally it was statistically analysed. To confirm the significance of the trial standard error of difference of means was calculated between T8 at one end and T1, T2, T3, T4, T5, T6 and T7 at the other end and then 't-test' was applied.

### III. RESULTS AND DISCUSSION

It was obvious from tables that use of nitrogen significantly promoted okra borer (*Eriasfabia*) infestation while potash exercised significant reverse action on the incidence of okra borer. The result with phosphate treatment was not significant, still mean infestation was found lower.

Usually growers add Nitrogen/Urea more than the presented dose (250kg/hect.) for higher yield of okra but this vegetable is phosphorous loving by nature. This abuse of nitrogen probably, enriches the amino-acid build up of okra fruit which acts as a very good nutrition for the internal feeders, i.e. borers. So, it may be safely suggested to minimize the dose of Urea and use phosphorous and potash in prescribed doses for okra cultivation. Such manipulation in doses may reduce the borer infestation.

On the basis of findings recorded in the year 2007 further study was conducted in year 2008 to determine the best suitable dose of NPK in combinations. Ammonium sulfate was substituted for urea because it contained 20.6% Nitrogen in comparison to 46.0% in Urea. Single super phosphate for phosphorus and mureate of potash for potash were used as in previous study.

Two plots of identical size (200sq/m) were prepared. One plot (T1) was treated with 5 kg ammonium sulphate, 8kg S.S.P. and 2 kg Mureate of Potash in three split doses of 1/2 before sowing, 1/4 after 15 days of sowing and 1/4 after 35 days of sowing while other plot was left untreated (T2-check). Fruits were harvested ten times at the interval of ten days at a fixed number of two hundred/harvest from both plots.

It was observed that plant growth and fruiting was very good and infestation was lower in T1 compared to T2 (Table-2). To know the significance of this study standard error of difference of means was calculated between T2 and T1 and 't-test' was applied.

It was evident from table(3) that T4 (N3+C2) was the best combination of oil cakes showing 12.2 percent infestation followed by T7 and T1 treatments. In later cases the percentage of infestation recorded were 14.00 and 15.00 respectively.

Joshi et. al. (1975) observed the efficacy of Neem Kernel against tobacco caterpillar (*Spodopteralitura*), Jotwani et. al. (1981) and Ketkar&Ketkar(1985) advocated the potential role of Neem in plant protection. The author observed that treatments 4, 1, 7 were superior to others. Neem cake mixed in higher dose (3 kg and 4 kg) mixed with comparatively lower dose at Castor ( 2kg and 1kg ) showed the significant population reduction of okra borer.

The major active constituent of the Neem seeds is azadirachtin which works at concentration as low as 0.1 ppm. The insecticidal action is systematic. The root system absorbs the materials and transports the active component into aerial parts. Thus the plant become resistant. Castor cake contains nitrogen which has a direct bearing on the growth of the plants. Because of these facts the present result seems correct and benefiting for the growers towards off the evil effects of borers. Further, more, in recent decades it has been reported that many insect pests are becoming mere resistant to existing insecticides at a time when the need to control them is becoming urgent (Gopaian et. al. 1979). In this regard natural plant chemicals may undoubtedly play an important role in controlling borer/pest menace plus reduces insecticidal pollution also which is posing danger to lives on the globe. From the above result it is clear that the fertilizer in combination is more significant than they used apart. Thus by the practice of IPM okra production enhanced.

**Table -1**  
**Efficacy of fertilizers (NKP) against *Erias Fabia***

Month 2007	Number of infested fruits/100			
	T1	T2	T3	T4
March	41	33	31	37
April	36	30	27	32
-	34	26	25	27
-	35	25	23	29
May	31	22	19	28
-	33	23	21	23
-	38	26	23	27
June	41	34	29	38
-	44	36	33	42
Mean	37.00	28.30	25.66	31.44
't-value'	2.19	1.16	2.22	-
Significant at 5%(16 df)	Significant	Not significant	Significant	-

Table -2

Efficacy of fertilizers (NKP) in combination against *Erias Fabia*

Month 2007	Number of infested fruits/200	
	T1	T2
March	54	66
-	50	57
April	39	56
-	43	48
-	47	59
May	61	78
-	73	85
-	72	92
June	84	107
-	92	115
-	88	110
Mean	63.90	79.36%
't-value'	1.77	
Significance	10%	

Table-3

Efficacy of manures oil cakes against *Erias Fabia*

Months 2007	T1	T2	T3	T4	T5	T6	T7	T8
March	29	34	37	28	30	32	30	36
	33	39	38	13	35	37	24	40
	37	47	45	17	38	42	27	46
April	11	49	48	29	42	43	12	51
	16	55	55	16	46	48	06	58
	12	53	54	02	45	46	03	53
May	21	50	49	08	44	45	12	42
	10	46	48	11	42	43	08	46
	12	42	42	12	33	37	13	43
June	08	39	39	06	31	33	18	39
	02	34	35	01	25	26	12	36
	04	26	29	12	17	18	15	32
July	09	21	23	09	12	13	09	21
	06	11	15	07	07	08	07	14
Mean	15.0	39.0039.78	12.2	31.92	33.64	14.00	-	
t-value	1.22	0.31	0.16	0.31	1.82	1.44	1.08	-
Significance at 26 dt.	at 5%	Not	Not	at 5%	at 10%	Not	at 5%	-

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