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Management of whitefly, *Bemisia tabaci* (Gennadius) infesting *Kharif* okra

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Abstract
Investigations on management of whitefly, *Bemisia tabaci* (Gennadius) infesting okra was carried out under field condition during the *kharif*, 2018 at Instructional Farm, Junagadh Agricultural University, Junagadh, Gujarat, India. For the management of whitefly, the effect of different potash fertilizer dose and foliar application of insecticides against whitefly, three potash fertilizer dose *viz.,* K_1: potash fertilizer @ 60 kg/ha, K_2: potash fertilizer @ 80 kg/ha and K_3: potash fertilizer @ 50 kg/ha as a soil application and foliar application of insecticides *viz.*, I_1: triazophos 40 EC @ 20 ml/10 lit, I_2: acetamiprid 20 SP @ 3 g/10 lit, I_3: diafenthiuron 50 WP @ 10 g/10 lit and I_4: control were tested. The combination of soil application of fertilizer and foliar application of insecticides *viz.*, K_1I_1, K_2I_1, K_3I_1, K_1I_2, K_2I_2, K_3I_2, K_1I_3, K_2I_3, K_3I_3, K_1I_4, K_2I_4 and K_3I_4 were evaluated against the pest. Based on pooled over periods, K_2I_2 (potash fertilizer @ 80 kg/ha + spray of acetamiprid 0.006%) followed by K_2I_1 (potash fertilizer @ 80 kg/ha + triazophos 0.04%) and K_2I_3 (potash fertilizer @ 80 kg/ha + diafenthiuron0.05%) were found most effective in controlling whitefly population. Significantly highest (13106 kg/ha) yield harvested in the plots treated with K_2I_2 (potash fertilizer @80 kg/ha + acetamiprid 0.006%) followed by K_2I_1 (potash fertilizer @80 kg/ha + triazophos 0.04%) [12782.29] and K_2I_3 (potash fertilizer @80 kg/ha + diafenthiuron 0.05%) [12088].

Keywords: *Bemisia tabaci* (Gennadius), insecticidal spray, okra, potash fertilizer, whitefly

Introduction
Among the vegetable crops grown in India, okra (*Abelmoschus esculentus* L. Moench), is also known as 'lady's finger' or 'bhendi' which is an important crop grown throughout the year. Besides India, it is grown in many tropical and subtropical parts of the world. Okra is the member of the family Malvaceae and is said to be native of Africa, possibly Ethiopia (Singh and Bhagchandani, 1967) [14]. Okra is one of the most economically important vegetable crop. It is widely cultivated as a summer season crop in North India and as a *kharif* and summer season crop in Maharashtra, Gujarat, Andhra Pradesh, Karnataka and Tamil Nadu. In India, okra is cultivated in 52.84 lakh ha with a production of 61.46 lakh tonne. While in Gujarat, total area under okra was 0.74 lakh ha with aproduction of 8.59 lakh tonne (Anonymous, 2017) [1].

Okra is one of the drought tolerant vegetable species of the world and can tolerate poor soils with heavy clay and intermittent moisture. It grows well in the areas where day temperatures remain between 25 to 40 °C and that of night over 22 °C. It is quite popular in India because of easy cultivation, dependable yield and adaptability to varying climatic conditions.

Its medicinal value has also been reported in curing ulcers and relief from hemorrhoids. Okra is very useful against genito-urinary disorders, spermatorrhoea and chronic dysentery (Thakur and Arora, 1986). Naturopathic medicines include okra for intestinal and irritable bowel dysfunction due to its mucilaginous properties. Okra mucilage is used for glace paper production and also a confectionary use. It has medicinal application as a plasma replacement or blood volume expander (Kumar *et al*., 2001) [5]. Okra is also known for harnessing a superior fibre, which helps with digestion, stabilizes blood sugar and helps to control the rate at which sugar is absorbed. Okra plants are also used for treating diseases like stones in kidney, leucorrhoea, backache and goitre in human beings.

Like other crops, okra is also ravaged by various insect pests. Shrinivas and Rajendran (2003) [13] recorded 72 species of insects infesting the okra.

The whitefly, *Bemisia tabaci* (Gennadius) the milky white minute flies; nymphs and adults causes damage to okra by sucking the cell sap from plants and plant parts of okra. The damage is caused by desapping the plants and deposits the droplets of honeydew on leaves, which provide a suitable condition for sooty mold development; as a result it inhibits the foliar photosynthesis and reduces commercial value of the crop (Oliveira *et al.*, 2001) [6].

Yellow vein clearing mosaic virus is a member of Geminivirus group which is semi persistently transmitted by whitefly. This virus is also transmitted through grafting, but not mechanically or through seeds. YVMV is one of the most destructive diseases of the crop and causes considerable reduction in yield which could be as 92 to 94% (Sastry and Singh, 1974) [12]. The virus seems to attack okra plants in any stage of plant growth, spreads quickly in the field and adversely affects the growth and yield (Hossain, 1998 and Sarma *et al.,* 1995) [11]. Besides quantity, fruit quality is also adversely affected due to this disease.

Materials and Methods

The experiment was laid out in a Randomized Block Design with factorial concept having three replications with the plot size of 2.4 m X 3.0 m during *kharif*, 2018 at Instructional Farm, College of Agriculture, Junagadh Agricultural University, Junagadh. Okra variety GJO-3 was sown at a spacing of 60 cm x 30 cm in July, 2018. All agronomical practices were adopted as per the recommendation in vogue. Details of treatments are given in Table 1.

Table 1: Details of insecticides used in foliar applications for management of okra whitefly, *B. tabaci*

Sr. No.	Technical name	Trade name	Formulation	Concentration	Dose /10 lit	Manufacture name
I_1	Triazophos	Trizor	40 EC	0.04%	20 ml	SDS Ramcides Crop Science Pvt. Ltd.
I_2	Acetamiprid	Pound	20 SP	0.006%	3 g	Bharat insecticides Ltd.
I_3	Diafenthiuron	Pajero	50 WP	0.05%	10 g	Bharat insecticides Ltd.

The crop was raised after following standard agronomic practices. All fertilizer doses were applied in different plots according to respective treatments at the time of sowing.

All the insecticides were applied in the form of foliar spray with the help of knapsack spryer. For deciding the quantity of spray fluid required per plot, the control plot was sprayed with water and determined the required spray fluid. Spray fluid was prepared by mixing measured quantity of water and insecticide. The necessary care was taken to prevent the drift of insecticide to reach the adjacent plots. Care was also taken to rinse the sprayer thoroughly before and after each spray with soap water to avoid contamination from treatment to treatment. First spray was applied at initiation of pest followed by second spray at 25 days interval.

Observations of *B. tabaci* population (No. of whitefly/leaf) was counted from the five randomly selected plants from the net plot area. The effectiveness of treatment was studied by recording the population of whitefly from respective treatment at weekly interval starting from the day of the crop germination to harvesting stages.

With a view to evaluate the effect of different pesticides on the okra yield, crop was harvested from each net plot. The harvested yield was weighted and converted on hectare basis. Economics of all the treatments was worked out by considering the price of products, cost of insecticides and labour charges. ICBR was worked out to compare the economics of different insecticidal treatments. The per cent increase in yield over control was calculated by using following formula (Pradhan, 1969) [7].

$$\text{Yield increased (Per cent)} = 100 \times \frac{T-C}{C}$$

Where, T = Yield from treated plot (kg/ha)
C = Yield from untreated plot (kg/ha)

Result and Discussion

Based on pooled over spray, effect of different potash fertilizer dose and foliar application of insecticides against whitefly, three potash fertilizer dose *viz.*, K_1: potash fertilizer @ 60 kg/ha, K_2: potash fertilizer @ 80 kg/ha and K_3: potash fertilizer @ 50 kg/haand foliar application of insecticides *viz.*, I_1: triazophos 40 EC @ 20 ml/10 lit, I_2: acetamiprid 20 SP @ 3 g/10 lit, I_3: diafenthiuron 50 WP @ 10 g/10 lit and I_4: control were tested. The combination of soil application of fertilizer and foliar application of insecticides *viz.*, K_1I_1, K_2I_1, K_3I_1, K_1I_2, K_2I_2, K_3I_2, K_1I_3, K_2I_3, K_3I_3, K_1I_4, K_2I_4 and K_3I_4 were made in such manner that overall effect can be worked out. During the experiment, potash fertilizer was given at the time of sowing while foliar applications were given twice with respective insecticides. The first spray was applied at initiation of pest followed by second was carried out at twenty five day after first spray.

The periodical data showing effect of potash fertilizer and foliar application of insecticides on infestation to okra due to whitefly were recorded on one, three, five and seven days after spray (DAS). The effect of different interaction has been adjudged based on pooled over spray.

Potash fertilizer

The data on mean whitefly count of pooled over spray presented in Table 2 Data revealed that among three potash fertilizer doses, potash fertilizer @ 80 kg/ha dose showed lowest whitefly count (2.31 whitefly /leaf). Next best treatment was potash fertilizer @ 60 kg/ha (2.99) followed by potash fertilizer @ 50 kg/ha (3.61) at one day after spray (DAS). Similar result was obtained from rest three day's data. On three, fifth, seventh DAS, potash fertilizer @ 80 kg/ha dose was found best followed by potash fertilizer @ 60 kg/ha and potash fertilizer @ 50 kg/ha.

Insecticidal spray

The data on mean whitefly count of pooled over spray presented in Table 2 revealed that among sprayed insecticides, acetamiprid 0.006% (2.28) was found with lowest whitefly also found at par with Triazophos 0.04% (2.56) and diafenthiuron 0.05% (2.79) on first DAS. While, on third DAS acetamiprid 0.006% (1.06) was found with minimum whitefly population found at par with triazophos 0.04% (1.25) and diafenthiuron 0.05% (1.49). On fifth DAS, acetamiprid 0.006% (2.69) gave good result with minimum whitefly population found at par with triazophos 0.04% (2.96). On other side, triazophos 0.04% was found at par with diafenthiuron 0.05% (3.20). As like 5DAS, acetamiprid 0.006% (3.65) gave good result with minimum whitefly population found at par with triazophos 0.04% (3.96). On other side, triazophos 0.04% was found at par with diafenthiuron 0.05% (4.20) at 7DAS.

Table 2: Effect of potash fertilizer along with foliar application of insecticides against whitefly (pooled over sprays)

Treatments		No. of whitefly /leaf			
		1 DAS	3 DAS	5 DAS	7 DAS
Potash fertilizer (K)					
K_1	Potash fertilizer @ 60 kg/ha	1.73*b* (2.99)	1.34*b* (1.80)	1.82*b* (3.31)	2.10*b* (4.41)
K_2	Potash fertilizer @ 80 kg/ha	1.52*a* (2.31)	1.12*a* (1.25)	1.62*a* (2.62)	1.87*a* (3.50)
K_3	Potash fertilizer @ 50 kg/ha	1.90*c* (3.61)	1.57*c* (2.46)	1.97*c* (3.88)	2.24*c* (5.02)
ANOVA					
S. Em. ±		0.02	0.02	0.02	0.02
C. D. at 5%		0.06	0.06	0.06	0.06
Insecticidal spray(I)					
I_1	Triazophos 0.04%	1.60*a* (2.56)	1.12*a* (1.25)	1.72*b* (2.96)	1.99*b* (3.96)
I_2	Acetamiprid 0.006%	1.51*a* (2.28)	1.03*a* (1.06)	1.64*a* (2.69)	1.91*a* (3.65)
I_3	Diafenthiuron 0.05%	1.67*a* (2.79)	1.22*a* (1.49)	1.79*b*(3.20)	2.05*b* (4.20)
I_4	Control	2.09*b* (4.37)	2.00*b* (4.00)	2.07*c* (4.28)	2.33*c* (5.43)
ANOVA					
S. Em. ±		0.06	0.08	0.02	0.02
C. D. at 5%		0.26	0.36	0.07	0.07
C. V. %		6.13	8.04	5.53	4.95

Notes:
1. NS: Non significant and S: Significant. Figures in parentheses are retransformed values; those outside are √x transformed values.
2. Treatment mean with letter(s) in common are not significant at 5% level of significance within a column.

Interaction effect between potash fertilizer and foliar application of insecticides on different days of observation

The data presented in Table 3 showing interaction between potash fertilizer and foliar application of insecticides revealed that the interaction was found significant on first, third, fifth & seventh DAS.

The order of effective combination based on whitefly counting okra on first Day after Spraying (DAS) is given in bracket was: K_2I_2 (1.54) ≤K_2I_1 (1.82) ≤K_2I_3 (2.07) ≤K_1I_2 (2.34) ≤K_1I_1 (2.62) ≤K_1I_3 (2.86) ≤K_3I_2 (3.13) ≤K_3I_1 (3.35) ≤K_3I_3 (3.50) ≤K_2I_4 (4.24) ≤K_1I_4 (4.33) ≤K_3I_4 (4.54).

Table 3: Interaction effect of potash fertilizer doses with different foliar application of insecticides against whitefly after pooled over sprays

Treatments	No. of whitefly /leaf									
	1 DAS		3 DAS		5 DAS		7 DAS		Pooled over periods	
K_1I_1	1.62*de* (2.62)		1.12*de* (1.25)		1.75*de* (3.06)		2.04*de* (4.16)		1.63*e* (2.66)	
K_1I_2	1.53*cd* (2.34)		1.02*cd* (1.04)		1.66*cd* (2.76)		1.94*cd* (3.76)		1.54*d* (2.37)	
K_1I_3	1.69*ef* (2.86)		1.23*ef* (1.51)		1.79*ef* (3.20)		2.09*ef* (4.37)		1.70*f* (2.89)	
K_1I_4	2.08*h* (4.33)		2.00*i* (4.00)		2.07*i* (4.28)		2.33*hi* (5.43)		2.12*ij* (4.49)	
K_2I_1	1.35*ab* (1.82)		0.83*ab* (0.69)		1.50*b* (2.25)		1.73*ab* (2.99)		1.35*b* (1.82)	
K_2I_2	1.24*a* (1.54)		0.76*a* (0.58)		1.37*a* (1.88)		1.64*a* (2.69)		1.25*a*(1.56)	
K_2I_3	1.44*bc* (2.07)		0.93*bc* (0.86)		1.59*bc* (2.53)		1.82*bc* (3.31)		1.44*c* (2.07)	
K_2I_4	2.06*h* (4.24)		1.95*i* (3.80)		2.04*hi* (4.16)		2.30*hi* (5.29)		2.08*i* (4.33)	
K_3I_1	1.83*g* (3.35)		1.42*gh* (2.02)		1.93*gh* (3.72)		2.21*fgh* (4.88)		1.85*h* (3.42)	
K_3I_2	1.77*fg* (3.13)		1.31*fg* (1.72)		1.88*fg* (3.53)		2.15*efg* (4.62)		1.78*g* (3.17)	
K_3I_3	1.87*g* (3.50)		1.50*h* (2.25)		1.98*ghi* (3.92)		2.24*ghi* (5.02)		1.90*h* (3.61)	
K_3I_4	2.13*h* (4.54)		2.04*i* (4.16)		2.09*i* (4.37)		2.36*i* (5.57)		2.15*j* (4.62)	
Mean	1.72 (2.96)		1.34 (1.80)		1.80 (3.24)		2.07 (4.28)		1.73 (2.99)	
	S.Em. +	C.D. at 5%	S.Em. +	C.D. at 5%	S.Em. +	C.D. at 5%	S.Em. +	C.D. at 5%	S.Em. +	C.D. at 5%
Periods (P)	-	-	-	-	-	-	-	-	0.02	0.07
Spray(Sp)	-	-	-	-	-	-	-	-	0.02	0.05
K x I	0.04	0.12	0.04	0.13	0.04	0.12	0.04	0.12	0.02	0.06
Sp x P	-	-	-	-	-	-	-	-	0.03	0.10
Sp x K x I	-	-	-	-	-	-	-	-	0.03	0.08
P x K x I	-	-	-	-	-	-	-	-	0.04	0.12
Sp x P x K x I	-	-	-	-	-	-	-	-	0.06	NS
C.V. %	6.13		8.04		5.53		4.95		11.33	

Notes:
1. NS: Non significant and S: Significant. Figures in parentheses are retransformed values; those outside are √X transformed values.
2. Treatment mean with letter(s) in common are not significant at 5% level of significance within a column.
3. Potash fertilizer dose: Potash fertilizer @ 60 kg/ha (K_1), Potash fertilizer @ 80 kg/ha (K_2) & Potash fertilizer @ 50 kg/ha (K_3) Foliar application: Triazophos 40 EC @ 20 ml/10 lit (I_1), Acetamiprid 20 SP @ 3 g/10 lit (I_2), Diafenthuron 50 WP @ 10 g/10 lit (I_3) & Control (I_4)

On third DAS, the order of effective combination based on whitefly count in okra is given in bracket was: K_2I_2 (0.58) ≤K_2I_1 (0.69) ≤K_2I_3 (0.86) ≤K_1I_2 (1.04) ≤K_1I_1 (1.25) ≤K_1I_3 (1.51) ≤K_3I_2 (1.72) ≤K_3I_1 (2.02) ≤K_3I_3 (2.25) ≤K_2I_4 (3.80) ≤K_1I_4 (4.00) ≤ K_3I_4 (4.16).

The order of effective combination after five days of spraying based on whitefly counting okra is given in bracket was: K_2I_2 (1.88) <K_2I_1 (2.25) ≤K_2I_3 (2.53) ≤K_1I_2 (2.76) ≤K_1I_1 (3.06) ≤K_1I_3 (3.20) ≤K_3I_2 (3.53) ≤K_3I_1 (3.72) ≤K_3I_3 (3.92) ≤K_2I_4 (4.16) ≤K_1I_4 (4.28) ≤K_3I_4 (4.37).

After seven days of spraying, the order of effective combination based on whitefly counting okra is given in brackets was: K_2I_2 (2.69) ≤K_2I_1 (2.99) ≤K_2I_3 (3.31) ≤K_1I_2 (3.76) ≤K_1I_1 (4.16) ≤K_1I_3 (4.37) ≤K_3I_2 (4.62) ≤K_3I_1 (4.88) ≤K_3I_3 (5.02) ≤K_2I_4 (5.29) ≤K_1I_4 (5.43) ≤K_3I_4 (5.57).

The data on mean whitefly count of pooled over spray and periods presented in Table 13. The order of effective combination of potash fertilizer and foliar application of insecticides based on whitefly count on okra given in bracket was: K_2I_2 (1.56) <K_2I_1 (1.82) <K_2I_3 (2.07) <K_1I_2 (2.37) <K_1I_1 (2.66) <K_1I_3 (2.89) <K_3I_2 (3.17) <K_3I_1 (3.42) <K_3I_3 (3.61) <K_2I_4 (4.33) <K_1I_4 (4.49) <K_3I_4 (4.62). The lowest whitefly population was found in the combination of K_2I_2 (potash fertilizer @ 80 kg/ha + acetamiprid 0.006%) and it was found superior [1.56 whitefly /leaf]. The next best combination was K_2I_1 (potash fertilizer @ 80 kg/ha + triazophos 0.04%)followed by K_2I_3 (potash fertilizer @ 80 kg/ha + diafenthiuron 0.05%), K_1I_2 (potash fertilizer @ 60 kg/ha + acetamiprid 0.006%), K_1I_1 (potash fertilizer @ 60 kg/ha + triazophos 0.04%), K_1I_3 (potash fertilizer @ 60 kg/ha + diafenthiuron 0.05%), K_3I_2 (potash fertilizer @ 50 kg/ha + acetamiprid 0.006%) and K_3I_1 (potash fertilizer @ 50 kg/ha + triazophos 0.04%). While, $K_3I_1$was found at par withK_3I_3 (potash fertilizer @ 50 kg/ha + diafenthiuron 0.05%).Least effective combinations were K_2I_4 (potash fertilizer @ 80 kg/ha + control) and K_1I_4 (potash fertilizer @ 60 kg/ha + control) found at par with each other.

The obtained results are in close conformity with the earlier workers as El-zahi *et al.* (2012) [2] proved that the inorganic fertilization of cotton field plants found effective to sucking pests' management. The combination of nitrogen fertilization with phosphorus and potashic fertilization results lower pest population. Raghuraman and Gupta (2005) [8] reported that acetamiprid 20SP provided better control of *B. tabaci*. Rana *et al.* (2006) [10] also reported similar results. Yadav *et al*. (2007b) [16] indicated that acetamiprid 20SP @ 100 g/ha was effective in reducing the incidence of whitefly as well as YVMV. Ramu *et al.* (2011) [9] reported that acetamiprid found to be effective with recording lowest disease incidence (3.15%) and whitefly population (3.33%). The next best treatment was triazophos was in agreement with findings of Ali *et al.* (2005b). Kannake (2014) [4] revealed that acetamiprid (20 SP) was the most effective treatment for the suppression of whitefly in okra and it was followed by triazophos (40 EC) and diafenthiuron (50 WP). Hence, all these reports are in close agreement with the present findings.

The data on yield harvested during 9 pickings from the different combinations are summarized in Table 4 that all doses of potash fertilizer with insecticidal sprays recorded significantly higher yield than control. The chronological order of effective combination in relation to yield kg/ha in comparison to control is given in bracket was: K_2I_2 (13106) > K_2I_1 (12782) > K_2I_3 (12088) > K_1I_2 (11532) > K_1I_1 (10930) > K_1I_3 (9773) > K_3I_2 (9403) > K_3I_1 (9125) > K_3I_3 (8708) > K_2I_4 (8384) > K_1I_4 (8106) > K_3I_4 (7829). The significantly highest (13106 kg/ha) yield harvested in the plots treated with K_2I_2 (potash fertilizer @ 80 kg/ha+ acetamiprid 0.006%).However, it was found at par with K_2I_1(potash fertilizer @ 80 kg/ha + triazophos 0.04%) [12782], K_2I_3 (potash fertilizer @ 80 kg/ha + diafenthiuron 0.05%) [12088] and K_1I_2 (potash fertilizer @ 60 kg/ha + acetamiprid 0.006%) [11532]. Further, K_1I_2 (potash fertilizer @ 60 kg/ha + acetamiprid 0.006%) [11532] was found at par with K_1I_1 (potash fertilizer @ 60 kg/ha + triazophos 0.04%) [10930]. While, K_1I_1 (potash fertilizer @ 60 kg/ha + triazophos 0.04%) [10930] was found at par with K_1I_3 (potash fertilizer @ 60 kg/ha + diafenthiuron 0.05%) [9773] and K_3I_2 (potash fertilizer @ 50 kg/ha + acetamiprid 0.006%) [9403]. Again, K_3I_2 (potash fertilizer @ 50 kg/ha + acetamiprid 0.006%) [9403] was found at par with K_3I_1 (potash fertilizer @ 50 kg/ha + triazophos 0.04%) [9125], K_3I_3 (8708), K_2I_4 (8384) and K_1I_4 (8106).

The per cent increase over control in yield was also worked out and presented in Table 4. The chronological order of various combinations based on the per cent increase in yield over control given in bracket was: K_2I_2 (67.40) > K_2I_1 (63.26) > K_2I_3 (54.40) > K_1I_2 (47.30) > K_1I_1 (39.61) > K_1I_3 (24.83) > K_3I_2 (20.17) > K_3I_1 (16.55) > K_3I_3 (11.23) > K_2I_4 (7.09) > K_1I_4 (3.54). Maximum yield loss could be avoided with application of K_2I_2 (potash fertilizer @ 80 kg/ha + acetamiprid 0.006%) (67.40) followed by K_2I_1 (63.26), K_2I_3 (54.40) and K_1I_2 (47.30). Even though the yield and yield increase over control was very low in the combinations *i.e.*, K_1I_1, K_1I_3, K_3I_2, K_3I_1, K_3I_3,K_2I_4 and K_1I_4 they increased the yield in range of 3.54 to 39.61 per cent.

Conclusion

The overall results of the present study suggest that whitefly incidence was effectively managed by potash fertilizer dose with K_2: potash fertilizer @ 80 kg/ha and spray application of I_2:acetamiprid 0.006%. Interaction of potash fertilizer to insecticidal spray was found effective in combination K_2I_2 (potash fertilizer @ 80 kg/ha + acetamiprid 0.006%). The highest yield was also received from K_2I_2 plot.

Table 4: Effectiveness of various combinations of potash fertilizer and foliar application of insecticides on okra yield due to whitefly

Treatments	Yield (kg/ha)	Yield increase over control (kg/ha)	Percentage yield increase over control
K_1I_1	10930*bc*	3101	39.61
K_1I_2	11532*ab*	3703	47.30
K_1I_3	9773*cd*	1944	24.83
K_1I_4	8106*de*	277	3.54
K_2I_1	12782*a*	4953	63.26
K_2I_2	13106*a*	5277	67.40
K_2I_3	12088*ab*	4259	54.40
K_2I_4	8384*de*	555	7.09
K_3I_1	9125*de*	1296	16.55
K_3I_2	9403*cde*	1574	20.17
K_3I_3	8708*de*	879	11.23
K_3I_4	7829*e*	-	-
Mean	10147	-	-
ANOVA			
S. Em. +	585.83	-	-
C. D. at5%	1718.33	-	-

C. V.%	10	-	-

Notes:

1. Yield increased over control = Yield of treatment – Yield of control
2. Percentage yield increase over control = $100\times\frac{T-C}{C}$ Where, T = Yield from treated plot (kg/ha), C = Yield from untreated plot (kg/ha)
3. Treatment mean with letter(s) in common are not significant at 5% level of significance within a column.
4. Potash fertilizer dose: Potash fertilizer @ 60 kg/ha (K_1), Potash fertilizer @ 80 kg/ha (K_2) & Potash fertilizer @ 50 kg/ha (K_3)
   Foliar application: Triazophos 40 EC @ 20 ml/10 lit (I_1), Acetamiprid 20 SP @ 3 g/10 lit (I_2), Diafenthuron 50 WP @ 10 g/10 lit (I_3) & Control (I_4)

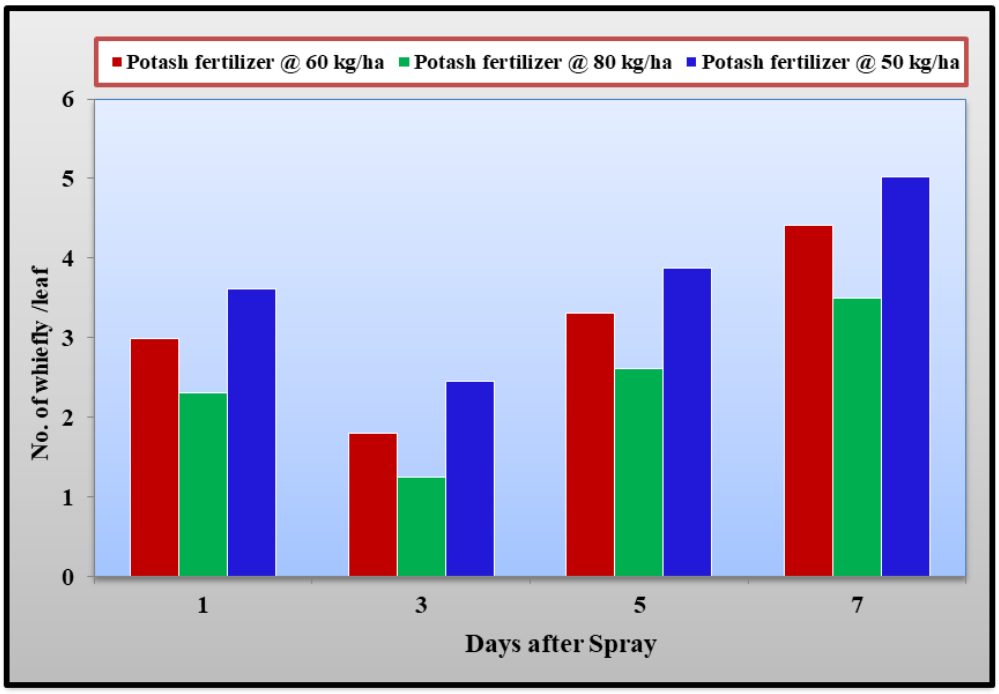

Fig 1: Bhalu *et al*., Effect of different doses of potash fertilizer on okra whitefly (Pooled over sprays)

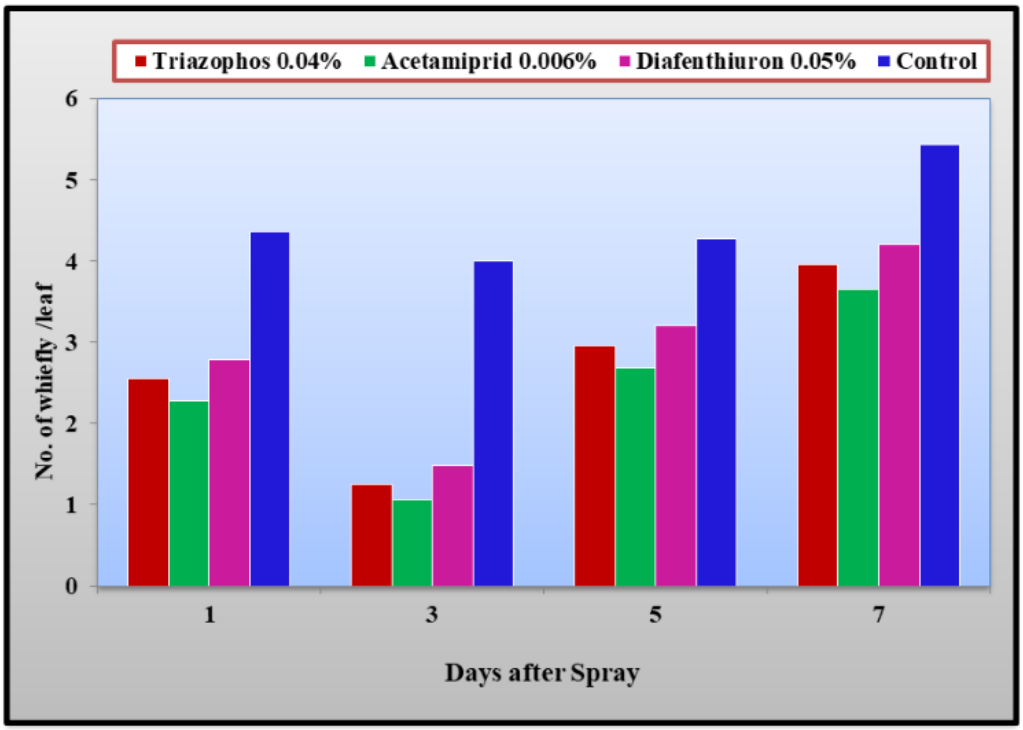

Fig 2: Bhalu *et al*., Effect of different insecticidal spray on okra whitefly (Pooled over sprays)

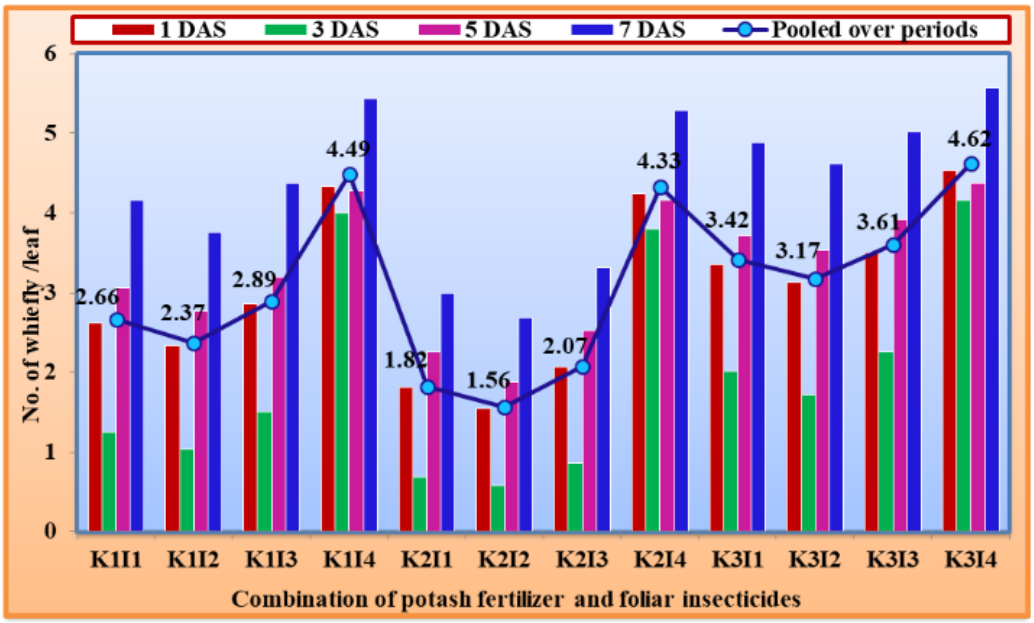

Fig 3: Bhalu *et al*., Interaction effect of potash fertilizer (K) and foliar application of insecticides (I) on okra whitefly (Pooled over sprays)

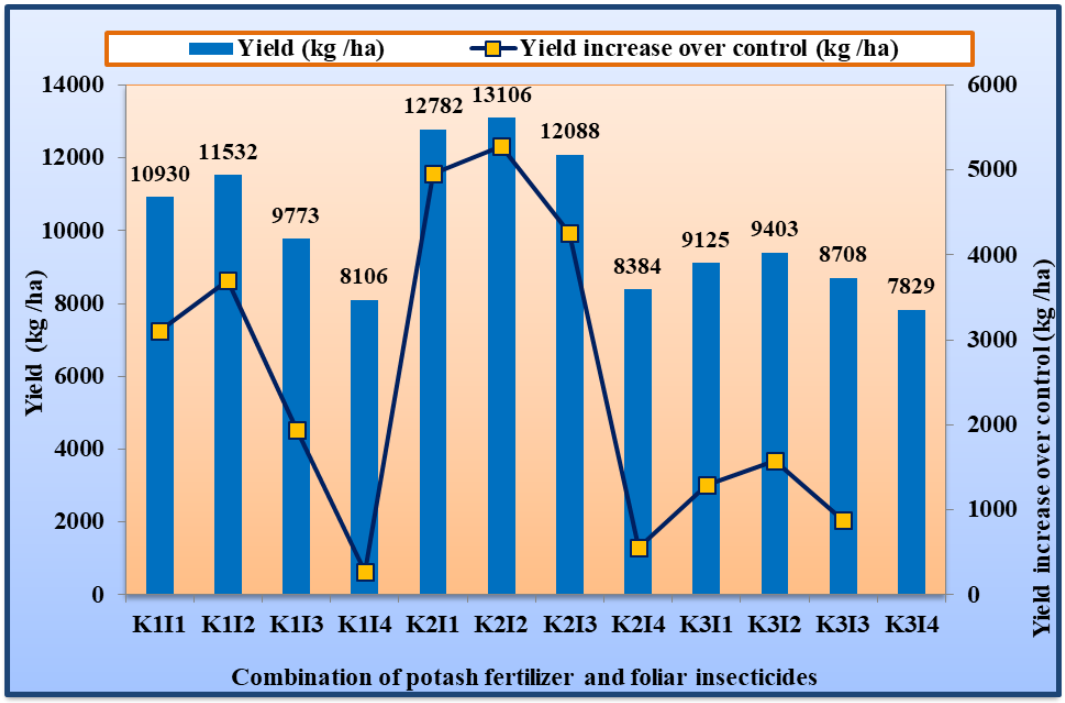

Fig 4: Bhalu *et al*., Effectiveness of various combinations on okra yield and yield loss due to *B. tabaci*

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