

1	TITLE	COMPARATIVE EFFICACY OF DIFFERENT TYPES OF SPRAYERS AGAINST SUCKING INSECT PESTS COMPLEX ON COTTON
	OBJECTIVES	To determine more efficient spray machine against sucking insect pests
	RESEARCH WORKERS	
	LOCATION:	Faisalabad, Multan
	DURATION:	2015-16
	TREATMENTS:	T1: Knapsack hand sprayer (pb-20) T2: Knapsack Battery operated T3: Knapsack power sprayer T4: Tractor mounted boom sprayer
	METHODOLOGY	The trial will be conducted in RCBD having 4 replications at Entomological Research Institute, Faisalabad. Spray machines mentioned above will be tested during month of August using hollow cone nozzle. Pre-treatment & post-treatment 24 hrs, 72 hrs & 7 days after application, population data of sucking insect pests will be recorded on per leaf basis. Data so obtained will be analyzed statistically. Data on water volume used and time consumed will also be recorded.
	Previous year's results	st 1 year
2	TITLE	DETERMINATION OF RUNOFF LOSSES OF SPRAY MATERIAL IN DIFFERENT SPRAYERS
	OBJECTIVES	To measure the pesticide run off losses in different sprayers
	RESEARCH WORKERS	
	LOCATION:	Faisalabad
	DURATION:	2015-16
	TREATMENTS:	T1: Knapsack hand sprayer (pb-20) T2: Knapsack Battery operated T3: Knapsack power sprayer
	METHODOLOGY	Trial will be laid out in the research area of Entomological Research Institute Faisalabad having four repeats. Polythene sheets will be spread between crop rows. After spray run off water droplets accumulated on plastic sheets will be collected and measured in the beaker then percentage runoff losses will be calculated and statistically analyzed.
	PREVIOUS YEAR'S RESULTS	1st year

3	TITLE	EFFECTIVENESS OF DIFFERENT TIME OF SPRAY APPLICATION ON ARMYWORM ATTACKING COTTON CROP
	OBJECTIVES	To determine the suitable time of spray application against armyworm on cotton crop
	RESEARCH WORKERS	
	LOCATION:	Faisalabad
	DURATION:	2015-16
	TREATMENTS:	Time of applications: 06:00 am 10:00 am 02:00 pm 06:00 pm Insecticide: Lufenuron 50 EC @ 200 ml/acre
	METHODOLOGY	The trial will be conducted in RCB design having four replications on cotton variety Lalazar. Pre- and Post-treatment data will be recorded before and after 72 hours and 7 days of spray by observing 5 tagged plants having armyworm larval population. Percentage reduction in pest population will be calculated and data will also be analyzed statistically
	Previous year's results	1st year
4	TITLE	DETERMINATION OF ECONOMIC THRESHOLD LEVEL OF DUSKY COTTON BUG (OXYCARENUS LAETUS) ON COTTON CROP
	OBJECTIVES	To determine economic threshold level of dusky cotton bug
	RESEARCH WORKERS	
	LOCATION	Faisalabad
	DURATION	2015-2020
	TREATMENTS/ METHODOLOGY	Experiment will be laid out in the research area of Entomological Research Institute Faisalabad following CRD. There will be six treatments consisting of different densities of dusky cotton bugs i.e. 0, 10, 20, 30, 40 and 50 bugs per boll/square will be released on potted cotton plants in iron cages covered with muslin cloth. Population of DCB will be maintained weekly until maturity. At harvesting seed cotton weight, lint color and percentage germination will be determined. Percentage losses will be calculated.
	PREVIOUS YEAR'S RESULTS	1st year

5	TITLE:	SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PESTS COMPLEX
	OBJECTIVES:	<ul style="list-style-type: none"> ▪ To evaluate the response of different cotton genotypes against insect pests. ▪ To provide data for varietal approval.
	RESEARCH WORKERS	
	DURATION:	Regular feature
	LOCATION:	Faisalabad and Vehari
	TREATMENTS/ METHODOLOGY:	Available genotypes will be sown in the research area of Entomological Research Institute, Faisalabad and Cotton Research Station Vehari. The experiment will be laid out in RCB Design having three repeats. Whitefly, jassid and thrips population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants. Attack of bollworms will be recorded by examining all fruiting bodies of 5 randomly selected plants /plot. Attack of Pink Bollworm will be observed by dissecting 25 randomly selected bolls per plot. Red cotton bug population will be recorded from 15 plants /plot selected at random while dusky cotton bug population will be observed from 15 randomly selected bolls per plot.

SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PEST COMPLEX AT FAISALABAD

	Thrips/Leaf	Whitefly/Leaf	Jassid/Leaf	DCB/Boll	RCB/Plant
1	5.42 E-J	2.67 H-P	1.12 O	12.20 B-H	0.70 KLM
2	5.72 D-I	3.29 E-K	1.58 E-N	10.73 JKL	1.26 E-H
3	5.99 DEFG	3.49 D-I	1.22 NO	12.70 BCD	1.30 E-H
4	6.72 CDE	3.35 E-J	1.37 I-O	11.33 D-K	1.40 D-G
5	5.27 E-J	3.99 A-G	1.35 I-O	10.30 L	1.13 G-J
6	6.61 CDEF	3.34 E-J	1.65 D-M	12.13 B-I	1.26 E-H
7	6.43 CDEF	4.00 A-G	1.13 O	11.10 H-L	0.80 J-M
8	9.04 AB	4.66 AB	1.24 MNO	12.20 B-H	1.03 H-K
9	9.27 AB	3.53 C-I	1.40 H-O	10.73 JKL	1.20 F-I

10	5.83 D-H	3.05 G-M	1.38 H-O	12.70 BCD	0.90 I-L
11	4.04 JK	3.61 C-H	1.28 L-O	10.30 L	0.60 LM
12	3.98 JK	4.15 AF	1.34 J-O	12.13 B-I	1.03 H-K
13	10.03 A	4.82 A	1.23 MNO	11.10 H-L	1.30 E-H
14	5.68 D-I	4.26 A-E	1.13 O	12.20 B-H	1.40 D-G
15	4.58 G-K	3.62 C-H	1.73 C-K	10.73 JKL	2.46 A
16	5.08 F-K	4.47 A-D	1.81 CH	14.43 A	1.56 DE
17	4.28 H-K	4.33 A-E	1.77 C-I	13.20 B	0.50 M
18	5.31 E-J	4.50 ABC	1.70 C-L	11.03 HIJKL	0.60 LM
19	3.95 JK	3.32 E-J	1.45 H-O	13.13 B	1.13 G-J
20	4.25 H-K	4.53 ABC	1.56 E-N	12.60 BCDE	1.96 BC
21	5.78 D-I	2.33 J-Q	1.81 C-H	12.20 B-H	1.40 D-G
22	4.16 I-K	3.04 G-M	1.43 H-O	11.36 F-L	1.46 D-G
	Thrips/Leaf	Whitefly/Leaf	Jassid/Leaf	DCB/Boll	RCB/Plant
23	4.60 GK	3.11 F-L	1.91 C-G	12.70 BCD	1.30 E-H
24	5.40 E-J	2.14 L-Q	2.34 AB	10.30 L	1.26 E-H
25	4.26 HIJK	2.73 H-P	1.98 B-E	12.13 B-I	1.13 G-J
26	7.86 BC	2.91 H-O	1.69 C-L	11.43 E-L	1.50 DEF
27	5.37 E-J	2.35 J-Q	2.12 BC	11.56 D-K	1.16 F-I
28	7.25 CD	2.68 H-P	1.58 E-N	13.30 AB	1.43 D-G
29	5.33 E-J	2.94 H-N	1.65 D-M	11.66 D-K	1.13 G-J
30	4.05 JK	2.27 K-Q	1.48 G-O	11.46 E-L	0.80 J-M
31	6.05 DEFG	3.69 B-H	1.32 K-O	12.43 B-F	1.20 F-I
32	4.22 HIJK	1.63 Q	2.34 AB	11.80 C-K	2.13 AB

33	6.62 CDEF	1.78PQ	1.96 B-F	12.16 B-H	1.30 E-H
34	9.93 A	1.61 Q	2.63 A	11.56 D-K	1.40 D-G
35	7.30 CD	2.06 M-Q	1.59 E-N	10.96 IJKL	1.46 D-G
36	7.06 CD	2.54 I-Q	1.63 D-N	12.96 BC	1.30 E-H
37	3.47 K	1.78 PQ	1.95 B-F	11.16 G-L	1.46 D-G
38	6.73 CDE	1.89 OPQ	1.57 E-N	11.83 C-J	1.30 E-H
39	4.57 G-K	2.26 K-Q	1.54 F-O	11.76 D-K	1.40 D-G
40	8.06 BC	2.08 L-Q	1.57 E-N	12.30 B-G	1.46 D-G
41	5.79 D-I	2.15 L-Q	2.06 BCD	10.63 KL	1.30 E-H
42	4.71 G-K	1.95 N-Q	1.75 C-J	12.46 B-F	1.26 E-H
43	5.37 E-J	2.35 J-Q	1.95 B-F	11.13 G-L	1.70 CD
44	5.92 DEFG	2.16 L-Q	1.47 G-O	11.67 D-K	1.20 F-I
LSD @ 5%	1.63	1.13	0.43	3.19	0.29

SUMMARY OF THE DATA REGARDING SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PEST COMPLEX AT FAISALABAD

	Whitefly/leaf	Thrips/leaf	Jassid/leaf	DCB/boll	RCB/Plant
Minimum Temp.	V34 (1.61), V32 (1.63); V33 and V37 (1.78)	V37 (3.47); V12 (3.98); V11 (4.04); V17 (4.28)	V1(1.12), V7 (1.13),V13 (1.23),V8 (1.24)	V11 and V5(10.30); V35 (10.96); V41 (10.36)	V1(0.70); V30 (0.80)
Maximum Temp.	V13 (4.82), V8 (4.66); V16 (4.47)	V13 (10.03); V8 (9.04); V9 (9.27); V34 (9.93)	V34 (2.63); V24 (2.34);	V16 (14.43); V19 (13.19); V17 (13.20); V36 (12.96)	V15 (2.46); V32 (2.13)
Range	1.61-4.82	3.47-10.03/LEAF	1.12-2.63	10.30-14.43	0.70-2.46

SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PEST

	Thrips/Leaf	Whitefly/Leaf	Jassid/Leaf	Bio-Controls/Plant	PBW %age Infestation	RCB/Plant	DCB/Boll or Square
1	4.67 D-G	4.04 EF	2.55 A	1.51 N-Q	22.25 IJKLM	1.73 ABCD	12.20 B-E
2	5.00 CDE	5.61 A	1.411 CDE	4.86 ABC	15.83 STU	1.46 CDEF	10.73 F-J
3	4.37 E-H	5.1 AB	1.50 BCD	2.20 J-Q	27.00 ABC	1.53 B-F	12.70 A-D
4	4.01 G-J	4.48 CDE	1.77 B	3.10 D-N	26.00 BCDE	2.26 A	11.63 D-G
5	6.10 B	4.49 CDE	1.32 DEF	2.93 E-P	20.25 MNOP	0.86 G-L	8.63 L
6	7.61 A	4.83 BC	1.53 BCD	4.80 ABC	15.83 STU	1.60 BCDE	12.13 B-E
7	3.65 H-L	3.13 GH	1.20 D-H	2.10 K-Q	14.82 TUV	0.46 KLM	11.10 E-I
8	2.96 L-O	3.81 F	1.74 BC	1.20 Q	19.93 NOP	0.73 G-M	12.20 B-E
9	3.52 I-L	2.02 MN	1.44 BCDE	3.33 C-M	27.86 AB	1.00 FGHIJK	10.73 F-J
10	5.22 CD	2.47 IJKLM	1.70 BC	5.26 AB	21.12 L-O	1.26 DEFG	12.70 A-D
11	4.76 D-G	2.64 G-M	1.47 BCD	3.03 D-O	22.70 HIJKL	2.06 AB	8.96 KL
12	6.42 B	2.76 GHIJK	1.70 BC	1.86 M-Q	20.09 NOP	1.46 CDEF	12.13 B-E
13	4.98 C-F	2.95 GHIJ	1.67 BC	2.73 G-Q	24.23 EFGHI	2.23 A	11.10 E-I
14	1.41 R	1.07 O	0.67 L	1.86 M-Q	17.49 RS	1.60 BCDE	12.20 B-E
15	2.53 N-Q	2.20 KLMN	0.841 IJKL	4.60 ABCD	15.6 STU	1.13 EFGHI	10.73 F-J
16	4.71 D-G	1.81 N	1.11 E-I	1.37 PQ	18.83 PQR	1.53 BCDEF	11.63 D-G
17	2.11 PQR	2.54 HIJKLM	1.30 D-G	2.65 G-Q	24.12 E-I	1.73 ABCD	9.63 J-L
18	3.24 J-O	2.20 KLMN	1.55 BCD	4.49 A-E	23.39 F-K	1.20 DEFGH	12.13 B-E
19	3.74 H-L	2.49 IJKLM	1.23 D-H	2.86 F-P	14.38 UV	0.26 M	11.10 E-I
20	3.66 H-L	2.24 KLMN	0.76 IJKL	2.82 F-P	15.65 STU	0.40 LM	12.20 B-E
21	3.32 J-M	2.07 LMN	0.66 L	4.07 A-G	20.00 NOP	0.33 LM	10.73 F-J
22	3.07 K-O	3.16 G	0.64 L	3.47 C-L	21.67 K-O	1.20 D-H	13.70 A
23	2.48 OPQ	2.23 KLMN	0.700 JKL	1.93 L-Q	16.79 RST	0.33 LM	10.30 H-J
24	3.56 I-L	2.50 IJKLM	0.92 HIJKL	2.20 J-Q	14.20 UV	0.66 H-M	12.13 B-E
25	2.60 M-Q	2.19 KLMN	0.82 IJKL	1.91 L-Q	22.25 I-M	1.20 DEFGH	11.43 D-H
26	1.83 QR	2.57 G-M	0.66 L	2.21I-Q	24.06 E-J	0.40 LM	11.56 D-H
27	2.65 M-P	2.47 IJKLM	0.98 F-L	3.84 B-H	17.58 QRS	1.06 E-J	11.30 E-H

28	3.67 H-L	4.07 EF	0.81 IJKL	3.14 D-M	22.00 J-N	0.86 G-L	11.66 D-G
29	3.12 K-O	2.97 GHI	1.03 FGHIJ	1.50 OPQ	26.33 BCD	1.13 E-I	11.46 D-H
30	4.28 E-I	2.52 HIJKLM	1.03 FGHIJK	3.93 B-G	25.17 CDEF	1.86 ABC	11.46 D-H
31	4.96 C-F	2.89 GHIJ	0.91 HIJKL	3.66 C-K	26.08 BCDE	0.53 JKLM	11.80 D-G
32	3.17 K-O	2.33 JKLMN	0.68 KL	2.80 F-P	21.67 K-O	0.40 LM	11.43 D-H
33	3.13 K-O	2.94 GHIJ	1.04 FGHIJ	3.28 C-M	22.82 G-L	0.20 M	11.56 D-H
34	3.30 J-N	4.38 CDEF	0.93 HIJKL	3.80B-I	18.78 PQR	0.600 IJKLM	9.96 IJK
35	2.10 PQR	3.00 GHI	0.93 HIJKL	2.32 H-Q	28.65 A	0.73 G-M	12.00 CDEF
36	3.56 I-L	4.31 CDEF	1.05 FGHI	2.90 E-P	13.80 UV	0.73 G-M	11.16 E-I
37	3.63 H-L	4.73 BCD	0.93 HIJKL	2.13 J-Q	24.81 DEFG	0.86 G-L	11.83 C-G
38	5.32 CD	3.95 EF	0.84 IJKL	3.44 C-M	17.64 QRS	1.06 E-J	13.43 AB
39	7.70 A	2.66 GHIJKL	0.68 KL	3.44 C-M	19.83 OP	0.86 G-L	12.30 BCDE
40	4.36 E-H	2.71 GHIJK	0.95 GHIJKL	3.40 C-M	13.22 V	0.73 G-M	10.63 GHIJ
41	3.84 H-K	2.68 GHIJKL	1.48 BCD	3.70 B-J	24.80 D-H	1.00 F-K	13.13 ABC
42	4.21 F-I	4.01 EF	1.22 DEFGH	5.67 A	21.62K-O	0.86 G-L	11.13 E-I
43	5.65 BC	4.13 DEF	1.54 BCD	4.33 A-F	19.65 OPQ	1.26 D-G	13.40 AB
LSD @ 5%	2.24	0.62	0.58	0.91	5.02	0.19	3.21

SUMMARY OF THE DATA REGARDING SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PEST COMPLEX AT VEHARI

	Whitefly/leaf	Thrips/leaf	Jassid/leaf	DCB/boll	RCB/Plant	PBW (%)
Minimum	V14 (1.07), V16 (1.81); V21 (2.07)	V14 (1.41); V26 (1.63); V17 (2.11)	V22(0.64), V21(0.66),V14 (0.67)	V5(8.63); V11 (8.96)	V7 (0.46), V17 (0.26), V21 (0.33)	V19 (14.38); V39 (13.80); V46 (13.22)
Maximum	V2 (5.61), V3 (5.10), V4 (4.49); V37 (4.73)	V6 (7.61); V39 (7.70)	V1 (2.55); V4 (1.77); V8 (1.74)	V22 (13.70); V38 (13.77); V43 (V43)	V4 (2.26) V11 and V13(2.06)	V35 (28.65); V29 (26.33)
Range	1.07-5.61	1.41-7.70	0.64-2.55	8.63-13.77	0.26-2.26	13.22-28.65

MORPHOLOGICAL CHARACTERS AND YIELD OF DIFFERENT COTTON GENOTYPES AT VEHARI

	Chlorophyll contents	Plant height (cm)	Hair Density ² (Lamina)/cm	Yield (kg/hac)	Leaf Area (cm ²)
1	48.70 OPQ	90.67 OPQRS	152.67 EFGH	432.2 P	33.97 MNO
2	58.12 DEFGHI	96.33 K-P	162 B-H	627.6 OP	45.357 FGH
3	47.20 PQ	89.67 OPQRS	174.33 ABCD	412.4 P	56.177 B
4	61.93 BCDE	85.33 RS	153.67 DEFGH	503.9 P	44.26 FGHIJ
5	60.90 BCDEF	83 S	171.33 ABCDE	1219.4 D-L	39.957 IJKL
6	53.50 JKLMN	117.33 BCD	153.33 DEFGH	1757.4 AB	36.697 LM
7	50.13 NOP	99.67 H-N	150.33 EFGH	1472.2 BCDE	29.673 OPQR
8	56.06 G-M	105.67 EFGHIJ	166.67 A-H	988.1 J-N	28.057 PQR
9	58.30 DEFG	91.33 NOPQRS	153.67 DEFGH	991.7 I-N	47.707 CG
10	56.77 F-M	89.33 OPQRS	157 CDEFGH	968.3 KLMNO	46.703 D-H
11	57.73 E-J	87.33 QRS	178.33 AB	627.6 OP	49.22 CDEF
12	58.00 D-I	91.67 NOPQRS	155.67 C-H	1223 D-L	47.663 CDEFG
13	58.76 C-G	98 IJKLMNO	160.33 B-H	432.2 P	22.923 ST
14	55.63 G-M	111 CDEF	159 B-H	1402.3 CDEFG	45.84 EFGH
15	63.70 B	123.33 B	163.67 B-H	536.2 P	68.043 A
17	62.73 BC	110 DEFG	156.67 C-H	919.7 LMNO	65.557 A
18	56.06 G-M	112.67 CDEF	153.67 D-H	1142.3 E-L	51.247 BCD
19	57.90 D-I	106.33 EFGHI	153.33 D-H	1056.2 G-M	43.13 GHIJ
20	53.83 I-N	97 J-P	155.66 CDEFGH	1890.1 A	45.32 FGH
21	53.06 LMN	116.67 BCD	146.33 H	1292.9 C-K	65.903 A
22	59.63 BCDEFG	106 EFGHI	157 CDEFGH	991.3 IJKLMN	52.557 BC
23	53.90 HIJKLMN	109.33 DEFG	148 FGH	699.4 NOP	41.943 HIJK

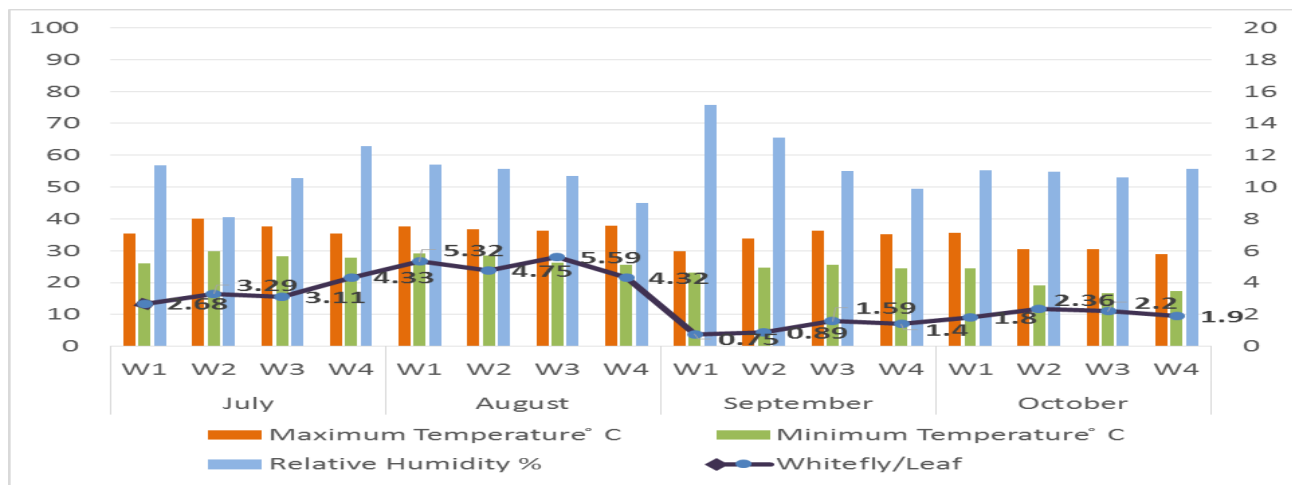
24	56.60 FGHIJKLM	100 HIJKLMN	185 A	1384.4 CDEFGH	43.453 GHIJ
25	62.20 BCD	101.33 GHIJKLM	179 AB	1275 CDEFGHIJK	25.03 RS
26	53.40 JKLMN	92.33 NOPQR	148.67 FGH	1526 BCD	34.103 MNO
27	53.36 KLMN	106 EFGHI	152 EFGH	1328.8 CDEFGHIJ	47.13 DEFG
28	45.70 Q	104 FGHIJKL	153.33 DEFGH	1416.6 BCDEF	26.85 PQRS
29	58.63 CDEFG	96.67 KLMNOP	159.33 BCDEFGH	1327 CDEFGHIJ	65.263 A
30	52.66 MNO	99.67 HIJKLMN	156.33 CDEFGH	988.1 JKLMN	34.263 MNO
31	57.06 FGHIJKL	97.67 IJKLMNOP	154 DEFGH	884.1 LMNO	33.85MNO
32	60.63 BCDEF	113.33 CDE	168.67 ABCDEF	731.6MNOP	37.21 KLM
33	58.30 DEFG	93 MNOPQR	176.33 ABC	948.6 KLMNO	31.477 NOP
34	58.20 DEFGH	110 DEFG	178.33 AB	1337.7 CDEFGHI	30.097OPQ
35	55.73 GHIJKLM	110 DEFG	147 GH	916.3 LMNO	44.84 FGHI
36	58.20 DEFGH	95.33 LMNOPQ	154.33 DEFGH	1404.1 CDEF	36.097 LMN
37	57.36 FGHIJKL	89 PQRS	153.67 DEFGH	1054.4 HIJKLM	50.613 CDE
38	57.26 FGHIJKL	107.33 EFGH	155 DEFGH	1145.9 EFGHIJKL	43.003 GHIJ
39	57.53 FGHIJK	106.33 EFGHI	147.67 FGH	1436.4 BCDE	30.427 OP
40	71.53 A	133.33 A	156.67 CDEFGH	921.7 LMNO	39.403 JKL
41	56.16 GHIJKLM	119.67 BC	168 ABCDEFG	1075.9 FGHIJKLM	25.13 QRS
42	58.06 DEFGHI	104.33 FGHIJK	155.33 CDEFGH	1590.6 ABC	19.62 T
43	53.83 IJKLMN	104.33 FGHIJK	151.67 EFGH	1025.7 IJKLMN	37.273 KLM
44	56.93 FGHIJKLM	98 IJKLMNO	176.33 ABC	432.2 P	28.473 PQR
LSD @5%	10.35	8.63	19.78	157.34	5.93

CORRELATION COEFFICIENTS OF THE DATA REGARDING SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PEST COMPLEX AT VEhari

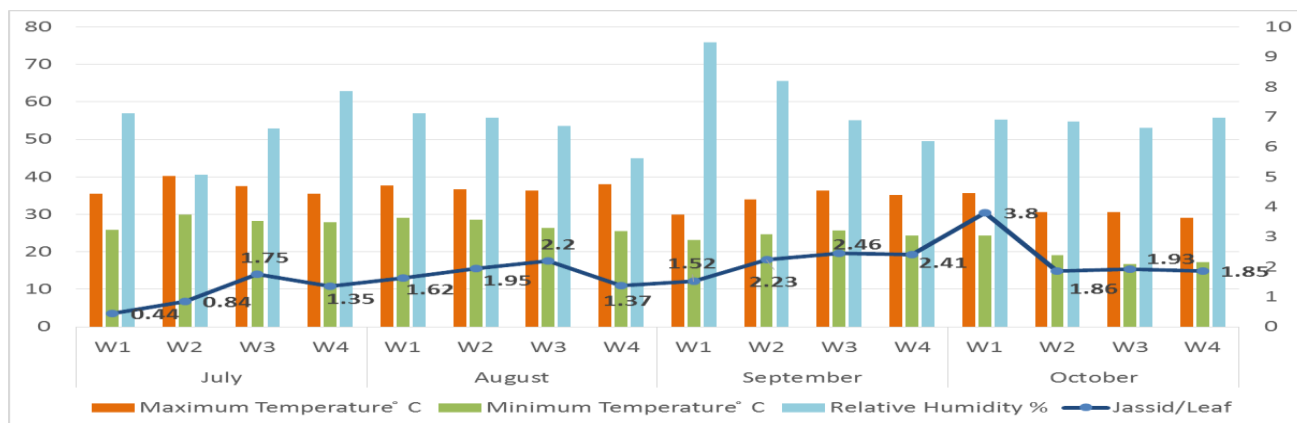
	Leaf Chlorophyll contents	Hair Density ² (Lamina)/cm	Leaf area ² (cm)	Yield (Kg/Hac)	Plant Height (cm)
Jassid/Leaf	-0.2047	-0.0028	-0.1772	-0.3481*	-0.4523**
Thrips/Leaf	0.3025*	0.056	-0.1063	-0.1746	0.0168
Whitefly/Leaf	0.0095	0.0464	0.0778	-0.2548	-0.1311

6	TITLE	STUDIES ON THE POPULATION DYNAMICS OF JASSID, THRIPS AND WHITEFLY ON BT COTTON .
	OBJECTIVES	To observe the population trends of jassid, thrips and whitefly during the crop season .
	RESEARCH WORKERS	
	DURATION:	Regular Feature
	LOCATION:	Faisalabad and Multan
	TREATMENTS/ METHODOLOGY:	Bt cotton crop will be kept under observation throughout the crop season at Faisalabad. Data regarding jassid ,thrips and whitefly population/leaf will be recorded at week interval by observing 15 randomly selected upper, middle and lower leaves of 15 plants per plot. Temperature and Relative Humidity data will also be recorded.
	PREVIOUS YEAR'S RESULTS	

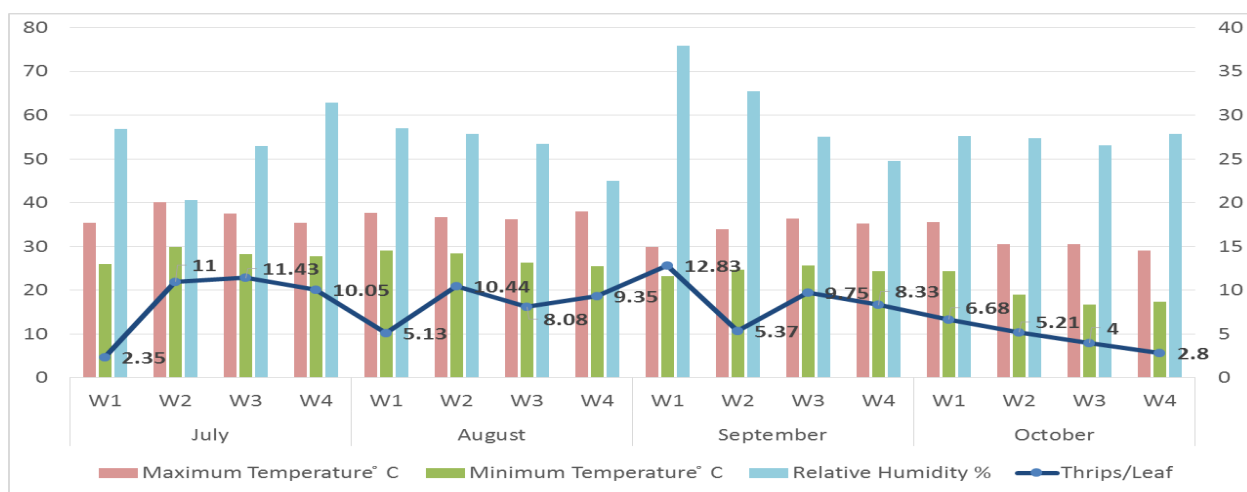
POPULATION DYNAMICS OF WHITEFLY/LEAF FROM THE MONTH OF JULY TO OCTOBER 2014



POPULATION DYNAMICS OF JASSID/LEAF FROM THE MONTH OF JULY TO OCTOBER 2014



POPULATION DYNAMICS OF THRIPS/LEAF FROM THE MONTH OF JULY TO OCTOBER 2014



CORRELATION COEFFICIENTS OF THE DATA REGARDING SUCKING PESTS OF COTTON AND WEATHER FACTORS

Weather Factors	Avg Jassid/Leaf	Avg Thrips/Leaf	Avg Whitefly/Leaf
Maximum Temperature (°C)	-0.1291	0.4049	0.554*
Minimum Temperature (°C)	-0.2176	0.5449*	0.5258*
Relative Humidity %	0.0728	0.041	-0.3445

7	TITLE:	EFFECT OF DIFFERENT TIMES OF SOWING ON INSECT PESTS INCIDENCE IN ON Bt COTTON CROP
	OBJECTIVES:	To find out the optimum planting time having minimum insect pest incidence in relation to seed cotton yield.
	RESEARCH WORKERS	
	DURATION:	2013-15
	LOCATION:	Faisalabad

TREATMENTS	T1: 15 Feb T2: 01 March T3: 15 March T4: 01 April T5: 15 April T6: 01 May T7: 15 May T8: 01 June T9: 15 June
METHODOLOGY:	The trial will be laid out in RCBD with three repeats. FH-312, FH-314. and FH-NOOR will be sown at CRI, Faisalabad starting from mid Feb till mid June with 15 days interval. Whitefly, jassid and thrips population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants. Bollworm infestation will be recorded by examining all fruiting bodies of 5 randomly selected plants /plot. Infestation of Pink Bollworm will be observed by dissecting 25 randomly selected bolls per plot.

Table : EFFECT OF DIFFERENT TIMES OF SOWING ON INSECT PESTS ATTACK IN COTTON (Lalazar) CROP

Sr. #	Date of sowing	Whitefly (pop/leaf)	Jassid (Pop/leaf)	Thrips (Pop/leaf)	Pink bollworm (%)	Bio-control pop/plant	Cotton yield (kg/ha)
T1	15 Feb	1.49 E	0.41 E	4.16 CDE	35.00A	3.36 BCD	5000
T2	01 March	2.31 CD	0.55 DE	4.65 BCD	30.00 BC	4.03 AB	6000
T3	15 March	1.75 DE	0.84 ABCD	4.28 CDE	16.66 G	4.13AB	5000
T4	01 April	2.20 CD	0.67 CDE	3.97 DE	18.33 FG	4.26 A	5079
T5	15 April	2.59 C	0.79 BCDE	3.84 DE	26.66 CD	3.83 ABC	4913
T6	01 May	3.81 B	0.96 ABC	3.66 E	21.66 EF	3.16 CD	3332
T7	15 May	4.55 A	1.20 A	5.31 B	35.00 A	3.95 ABC	2908
T8	01 June	4.02 AB	1.14 AB	7.01 A	33.33 AB	2.96 D	2700
T9	15 June	3.69 B	0.68 CDE	5.10 BC	25.00 DE	2.66 D	1905
LSD @ 5%		0.89	0.28	0.87	4.4	0.82	

EFFECT OF DIFFERENT TIMES OF SOWING ON INSECT PESTS ATTACK IN COTTON (FH-312) CROP

Sr. #	Date of sowing	Whitefly (Pop/Leaf)	Jassid (Pop/leaf)	Thrips (Pop/leaf)	Pink bollworm (%)	Bio-control pop/plant	Cotton yield (kg/ha)
T1	15 Feb	3.21 D	0.45 EF	5.78 A	23.33 AB	3.68 BC	6000
T2	01 March	4.60 C	0.20 F	5.63 AB	26.67 A	5.50 A	5395
T3	15 March	3.29 D	0.57 DE	5.96 A	8.33 E	3.93 BC	5007

T4	01 April	3.28 D	0.75 CDE	5.40 AB	13.33 DE	4.27B	5608
T5	15 April	3.71D	0.80 BCD	5.22 AB	16.66 CD	3.53 C	4005
T6	01 May	5.88 AB	0.84 BCD	4.85 AB	21.66 ABC	2.23 D	3300
T7	15 May	5.42 B	0.92 ABC	6.20 A	10.00 E	2.21 D	3000
T8	01 June	6.12 A	1.09 AB	5.05 AB	25.00 A	1.70 DE	2500
T9	15 June	4.65 C	1.17 A	4.13 B	18.33 BCD	1.43 E	1900
LSD @ 5%		0.64	0.08	2.15	6.17	0.65	

8-TITLE	EFFECT OF MOISTURE ON SURVIVAL POTENTIAL OF DUSKY COTTON BUG
OBJECTIVES	To study survival potential on moisture provided through different sources
RESEARCH WORKERS	
DURATION	2015-16
LOCATION	Faisalabad
TREATMENTS	T ₁ = Cotton Leaves T ₂ = Cotton Bolls T ₃ = Cotton Squares T ₄ = Cotton Flowers T ₅ = Water soaked cotton swab T ₆ = Guava leaves T ₇ = Control (Without any feed)
METHODOLOGY	Experiment will be performed in the laboratory. Dusky bug will be collected from the hibernating sites. Experiment will be performed in Petri dishes and perforated plastic tube. Each Petri dish & tube will contain 15 adults. Observations will be recorded after every 24 hrs until all the bugs will die. Experiment will be repeated 5 times.
PREVIOUS YEAR'S RESULTS	First year
9-TITLE	EFFECT OF DIFFERENT PLANT EXTRACTS AGAINST DUSKY COTTON BUG IN THE LABORATORY AND FIELD
RESEARCH WORKERS	
OBJECTIVES	To avoid the shifting of DCB from alternate host plants to main crop with minimum use of chemicals
DURATION	2015-16
LOCATION	Faisalabad

TREATMENTS	T1 = Neem (<i>Azadirachta indica</i>) T2 = Milkweed (<i>Calotropis procera</i>) T3 = Moringa (<i>Moringa olifera</i>) T4 = Citrus (<i>Citrus Sinensis</i>) T5 = Tobacco (<i>Nicotiana tobacum</i>) T6 = Castor (<i>Ricinus communis</i>) T7= Dimethoate 40 EC @ 3 ml/liter of water	50, 25 & 12.5 gm/100 lit water
METHODOLOGY	Dusky cotton bug will be collected in perforated plastic tube to carry out toxicological studies in the laboratory. Botanicals will be applied by using dip method of filter paper having three concentrations i.e. 5, 2.5 and 1.25 % with five repetitions. Filter paper will be dipped in different plant extracts and dry for 20 minutes prior to shifting to petri dishes. Dusky cotton bug will placed in freezer for 5 minutes to slow down its activity for its easy shifting. Twenty adults of dusky bug will be placed in each Petri dish containing filter paper dipped with plant extract and standard insecticide. Data will be collected 24, 48, 72 and 96 hours after application. The average percent mortality in each treatment will be corrected by the Abbotts Formula (Abbott, 1925).	
PREVIOUS YEAR'S RESULTS	First year	
10-TITLE:	DETERMINATION OF RESISTANCE LEVEL IN SELECTED GENOTYPE OF BT COTTON AGAINST PINK BOLL WORM	
RESEARCH WORKERS		
OBJECTIVE	To determine the resistance level in Bt against PBW	
DURATION	2015-2016	
LOCATION	Faisalabad	
TREATMENTS	Available Bt varieties in field	
METHODOLOGY	Infested bolls of pink boll worm will be collected from cotton field. Bolls will be kept in jars .Adult will be collected from the jars after the emergence from the pupae. Adult will restrained in the cages for egg laying on cotton twigs. The egg will be placed in the incubator at 27+ 2 0C for hatching. After the emergence of 1st instars. The emerged 1st instars larvae will be released on five bolls of each Bt genotypes by making small wholes in the boll with needle. Data regarding survival of PBW larvae will be recorded after 25 days. Data will be analyzed statistically	

PREVIOUS YEAR'S RESULTS	First Year
11-TITLE:	EVALUATION OF DIFFERENT IPM MODULES AGAINST SUCKING INSECT PEST OF BT COTTON
OBJECTIVE:	To find out the comparatively effective module for the control of sucking pest
RESEARCH WORKER	Zafar Iqbal & Muhammad latif
DURATION:	2014-15
LOCATION:	Research Area, ERI, Faisalabad
TREATMENTS / METHODOLOGY	<p>1st Module Seed treatment with Confidor 70 WS @ 7gm/Kg of seed + 3 releases of chrysoperla Larvae @ 4000/Acre at pest appearance and then at 20 days interval + 5 spray of neem extract 5% solution at weekly interval, starting after 50 days of sowing</p> <p>2ndModule Seed treatment with Confidor 70 WS @ 7gm/Kg of seed + 3 releases of chrysoperla Larvae @ 4000/Acre at pest appearance and then at 20 days interval + 5 spray of dhatura extract 5% solution at weekly interval, starting after 50 days of sowing + spray of insecticides as per pest situation.</p> <p>3rd Module Seed treatment with Confidor 70 WS @ 7gm/Kg of seed + 5 spray of tobacco extract 5% solution at weekly interval, starting after 50 days of sowing + spray of insecticides as per pest situation .</p> <p>4thModule spray of insecticides .</p> <p>Above mentioned module will be applied and data of sucking insect pest population (Jassid, Whitefly and thrips recorded from 45 leaves selected at random from each module at weekly interval for 3 months.. Cost benefit ratio of each module will be also be calculated.</p>

EVALUATION OF DIFFERENT IPM MODULES AGAINST SUCKING INSECT PEST OF BT COTTON

Module	Jassid/leaf	Whitefly/leaf	Thrips/leaf	cost(Rs./acre)	Yield/acre(kg)	income/acre	C/B ratio
1 st Module	1.33 a	1.45 ab	1.13 b	7250	1032.7 ab	56760	1:7.83
2 nd Module	1.22 ab	1.50 ab	1.29 ab	7250	995.7 b	54758	1:7.61
3rd Module.	1.14 b	1.70 a	1.65 a	4050	1027.3 ab	56485	1:13.95
4 th Module	0.72 c	1.09 b	1.05 b	8000	1102.3 a	60610	1:7.58
LSD 5 %	0.1362	0.44	0.41		97.77		
12	TITLE:		Efficacy of <i>Aenasius</i> spp. against cotton mealy bug				
	OBJECTIVES:		To find out the predatory efficiency on cotton mealy bug nymphs				
	RESEARCH WORKERS		Muhammad Farooq, Dr. Faisal Hafeez				
	DURATION:		2015-16				
	LOCATION:		Faisalabad				
	TREATMENTS METHODOLOGY:		One pair of newly emerged parasites will be placed in the petri dish containing ten mealy bugs of 3 rd instar, with five replications. Each pair will be shifted to other petri dish after 24 hours and the same will be repeated until the life of the parasites.				

	PREVIOUS YEAR RESULTS	First Year
13	TITLE:	EFFICACY OF NEW INSECTICIDES AGAINST COTTON THRIPS
	OBJECTIVES:	<ul style="list-style-type: none"> To evaluate different insecticides against cotton thrips and their impact on beneficial fauna (Standardization).
	RESEARCH WORKERS	
	DURATION:	Regular feature
	LOCATION:	Faisalabad
	TREATMENTS/ METHODOLOGY:	Cotton crop will be sown in the research area of ERI, Faisalabad, in RCB Design, having three repeats with a plot size 15 x 27 sq.ft. Available new insecticides will be evaluated. Thrips population will be recorded 24 hours before and after 3 & 7 days of spray from 15 randomly selected upper, middle and lower leaves of 15 plants per plot. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.

EFFICACY OF NEW INSECTICIDES AGAINST COTTON THRIPS

	Insecticides/Treatments	Dose rate	Pre-Treatment Thrips Pop./ Leaf	Post-Treatment Thrips/Leaf		Mortality %age After		Beneficial's Survival %	
				72HAA	7 DAA	72HAA	7 DAA	72HAA	7 DAA
T1	Vapco 40% WDG (Acetamiprid)	65 g	11.37	3.00	3.67	76.09 C	72.93 EF	55.16 BCD	49.25 EF
T2	Rani 20% SL (Acetamiprid)	125ml	11.07	3.20	3.87	74.59 C	71.54 EF	53.40 CD	49.67 EF
T3	Coniflex 20% SL (Imidacloprid)	250ml	11.03	2.47	3.13	80.27 B	76.74 CD	57.70 BC	53.69 B-E
T4	Coniflex 50% WDG (Imidacloprid)	100 g	11.07	2.27	2.80	82.01 AB	79.24 BC	55.41 BCD	57.01 B
T5	Confidor 20% SL (Imidacloprid)	250ml	10.70	3.20	3.53	74.53 C	73.91 DE	59.99 B	50.40 DEF
T6	Coniflex 70% WS (Imidacloprid)	50 g	11.07	3.07	3.53	75.53 C	73.96 DE	49.32 D	56.28 BC
T7	Confidor 70% WS (Imidacloprid)	50 g	11.03	3.13	3.67	75.03 C	72.85 EF	56.71 BC	47.98 F
T8	Style 22 % SC (Abamectin+Chlorfenapyr)	200ml	11.07	2.33	2.27	81.41 B	83.10 A	54.30 BCD	53.31 B-F
T9	Pirate 36% SC (Chlorfenapyr)	100ml	11.37	2.20	2.53	82.53 AB	81.344 AB	58.22 BC	51.74 B-F
T10	Foxel 36% SC (Chlorfenapyr)	330ml	11.07	2.20	2.47	82.51 AB	81.83 AB	55.67 BC	53.59 BCDE

T11	Foxel 50% WDG (Chlorfenapyr)	75 g	11.37	2.00	2.27	84.10 A	83.23 A	55.53 BC	51.60 CDEF
T12	Deltamax (Deltamethrin+Triazophos)	600ml	11.07	3.27	4.00	73.93 C	70.56 F	53.72 CD	53.07 B-F
T13	Compass 15% WP (Bifenthrin+Nitenpyram)	250g	11.37	2.40	3.07	80.94 B	77.26 C	55.16 BCD	55.21 BCD
T14	Check		10.98	12.57	13.62	0.00 D	0.00 G	100.0 A	100.00 A
	LSD @ 5%					4.34	4.25	6.12	5.36
14	TITLE:	EFFICACY OF NEW INSECTICIDES AGAINST COTTON WHITEFLY (<i>Bemisia tabaci</i>).							
	OBJECTIVES:	To evaluate new insecticides against cotton whitefly and their impact on beneficial fauna (Standardization).							
	RESEARCH WORKERS								
	DURATION:	Regular feature							
	LOCATION:	Faisalabad							
	TREATMENTS	Available new insecticides							
	METHODOLOGY:	Cotton crop will be sown in the research area of ERI, Faisalabad in RCB Design, having three repeats. Available new insecticides will be tested against whitefly. Cotton whitefly population will be recorded 24 hours before and after 3 and 7 days of treatment application from 15 randomly selected upper, middle and lower leaves of 15 plants per plot. Phyto-toxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 72 hrs and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.							

EFFICACY OF NEW INSECTICIDES AGAINST COTTON WHITEFLY

	Insecticides / Treatments	Dose rate	Pre-Treat. Whitefly/ Leaf	Post-Treatment Whitefly pop./Leaf		Mortality %age After		Biocontrols Survival %	
				72HAA	7 DAA	72HAA	7 DAA	72HAA	7 DAA
T1	Vapco 40% WDG (Acetamiprid)	65 gram	6.70	1.53	1.73	80.36 AB	76.02 C	55.16 BCD	49.25 CD
T2	Rani 20% SL (Acetamiprid)	125 ml	6.07	1.53	1.60	80.75 AB	77.85 BC	53.39 CD	47.93 D
T3	Coniflex 20% SL (Imidacloprid)	250ml	6.70	2.13	2.07	73.14 C	71.57 D	57.70 BC	53.69 BC

T4	Coniflex 50% WDG (Imidacloprid)	100 gram	6.07	1.27	1.40	83.29 AB	80.63 AB	55.41 BCD	57.01 B
T5	Confidor 20% SL (Imidacloprid)	250ml	6.70	1.53	1.47	80.15 B	79.71 B	59.99 B	50.40 CD
T6	Coniflex 70% WS (Imidacloprid)	50 gram	6.07	1.33	1.40	82.95 AB	80.65 AB	49.32 D	56.28 B
T7	Confidor 70% WS (Imidacloprid)	50 gram	6.47	1.47	1.40	81.20 AB	80.55 AB	56.71 BC	47.98 D
T8	Lanolex 30% WDG (Pyriproxyfen)	100 gram	7.77	1.07	1.20	86.27 A	83.45 A	55.16 BCD	47.95 D
T9	Check		7.68	7.93	7.25	0.00 D	0.00 E	100.00 A	100.00 A
	LSD @ 5%					6.09	4.19	6.31	4.72
15	TITLE:	EFFICACY OF NEW INSECTICIDES AGAINST COTTON JASSID (<i>Amrasca biguttula biguttula</i> Ishida).							
	OBJECTIVES:	To evaluate insecticides against cotton Jassid and their impact on beneficial fauna (Standardization).							
	RESEARCH WORKERS								
	DURATION:	Regular feature							
	LOCATION:	Faisalabad							
	TREATMENTS	Available new insecticides							
	METHODOLOGY:	Cotton crop will be sown in the research area of ERI, Faisalabad, in RCB. Design, having three repeats. Insecticides will be evaluated against Cotton jassid and the pest population will be recorded 24 hours before and after 3 and 7 days of spray from 15 randomly selected upper, middle and lower leaves of 15 plants per plot. Phytotoxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 72 hrs and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.							
	Insecticides/Treatments	Dose rate	Pre-Treat. Jassid Pop./ Leaf	Post-Treatment Jassid/Leaf		Mortality %age After		Beneficials Survival %	
72HAA				7 DAA	72HAA	7 DAA	72HAA	7 DAA	
T1	Vapco 40% WDG (Acetamiprid)	65 gram	1.37	0.27	0.41	79.66 AB	76.51 ABC	55.16 BC	67.86 B
T2	Rani 20% SL (Acetamiprid)	125 ml	1.07	0.29	0.44	78.51 AB	75.10 ABC	53.40 BC	63.32 B

T3	Coniflex 20% SL (Imidacloprid)	250ml	1.03	0.31	0.41	77.67 AB	76.43 ABC	57.70 B	64.69 B
T4	Coniflex 50% WDG (Imidacloprid)	100 gram	1.07	0.28	0.40	80.12 AB	77.34ABC	55.41 BC	68.01 B
T5	Confidor 20% SL (Imidacloprid)	250ml	1.37	0.33	0.53	76.13 B	70.300 C	59.99 B	61.40 B
T6	Coniflex 70% WS (Imidacloprid)	50 gram	1.07	0.28	0.41	79.10 AB	76.53 ABC	49.32 C	67.29 B
T7	Confidor 70% WS (Imidacloprid)	50 gram	1.03	0.29	0.47	78.63 AB	73.21 BC	56.71 B	64.62 B
T8	Pirox Super 50% WDG (Nitenpyram)	50 gram	1.07	0.24	0.35	82.43 AB	80.59 AB	54.30 BC	64.31 B
T9	Thomson 25% WG (Thiamethoxam)	24 gram	1.37	0.29	0.37	80.02 AB	79.51 AB	58.22 B	62.74 B
T10	Actara 25% WG (Thiamethoxam)	24 gram	1.07	0.27	0.39	80.69 AB	78.10 AB	55.67 BC	64.60 B
T11	Foxel 36% SC (Chlorfenapyr)	330ml	1.03	0.25	0.33	82.53 AB	81.26 A	55.53 BC	62.61 B
T12	Foxel 50% WDG (Chlorfenapyr)	75 gram	1.07	0.22	0.33	84.54 A	80.57 AB	53.72 BC	64.07 B
T13	Deltamax (Deltamethrin+Triazophos)	600ml	1.37	0.50	0.67	64.30 C	62.25 D	54.40 BC	61.17 B
T14	Flax Super 50% WSG (Nitenpyram)	50 Gram	1.07	0.27	0.33	80.87 AB	80.70 A	55.93 BC	62.55 B
T15	Pyramid 10% SL (Nitenpyram)	200 ml	1.03	0.25	0.37	82.15 AB	79.09 AB	56.10 BC	66.90 B
T16	Compass 15% WP (Bifenthrin+Nitenpyram)	250gram	1.07	0.25	0.32	82.58 AB	81.87 A	55.16 BC	66.21 B
T17	Check		0.98	1.40	1.78	0.00 D	0.00 E	100.00 A	100.0 A
	LSD @ 5%					7.76	7.45	6.92	8.43

16	TITLE:	EFFICACY OF NEW INSECTICIDES AGAINST SPOTTED BOLLWORM OF COTTON
	OBJECTIVES:	To evaluate new insecticides against spotted bollworm and their impact on beneficial fauna (Standardization).
	RESEARCH WORKERS	

	DURATION:	Regular feature
	LOCATION:	Faisalabad
	TREATMENTS	Available new insecticides
	METHODOLOGY:	Cotton (non Bt) crop will be sown in the area of ERI, Faisalabad, in RCB design, having three repeats. Insecticides will be evaluated against spotted bollworm and the larval population will be recorded 24 hours before and after 3, and 7 days of spray from 5 randomly selected plants per plot. Phyto-toxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 72 hrs and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.

EFFICACY OF NEW INSECTICIDES AGAINST SPOTTED BOLLWORM OF COTTON

	Insecticides	Dose Rate	Pre-Treat. SBW(# of larvae/Plant)	Post-Treatment SBW(# of larvae/Plant) after		Mortality %		Bio-Controls Survival %	
				72 HAA	7DAA	72 HAA	7 DAA	72HAA	7 DAA
T1	Deltamax 36% EC (Deltamethrin+Triazophos)	600 ml/ac	2.00	0.45	0.41	80.62 A	83.55 A	52.00 B	53.79 B
T2	Timer 1.9 EC (Emmamectin benzoate)	200 ml/ac	1.93	0.49	0.55	80.24 A	77.43 B	54.24 B	51.71 BC
T3	Boxer 2.5EC (Lambda-Cyhalothrin)	330 ml/ac	1.33	0.33	0.36	79.00 A	78.97 AB	48.96 B	45.43 C
T4	Staarfen 10% EW (Bifenthrin)	250 ml/ac	1.73	0.39	0.36	79.50 A	82.09 AB	53.32 B	47.27 BC
T5	Resham 10% EC (Bifenthrin)	250 ml/ac	1.67	0.43	0.41	77.56 A	79.71 AB	52.67 B	44.70 C
T6	Jumper 10% WDG (Lambda-Cyhalothrin)	200 ml/ac	1.67	0.41	0.43	78.13 A	78.60 AB	51.76 B	44.70 C
T7	Checkworm 5% EC (Emmamectin benzoate)	80 ml/ac	1.87	0.41	0.39	80.96 A	82.61 AB	51.07 B	47.01 BC
T8	Check		1.40	1.73	1.80	0.00 B	0.00 C	100.0 A	100.00 A
	LSD @ 5%					6.4	5.65	7.07	7.33
17	TITLE:	EFFICACY OF DIFFERENT INSECTICIDES AGAINST DUSKY COTTON BUG (<i>OXYCARENUS LAETUS</i>)							

	OBJECTIVES:	To evaluate the comparatively effective insecticides against Dusky Cotton Bug and their impact on beneficial fauna (Standardization).
	RESEARCH WORKERS	
	DURATION:	2013-15
	LOCATION:	Faisalabad
	TREATMENTS/ METHODOLOGY:	Cotton crop will be sown in the area of Entomological Research Institute, in RCB. Design, having plot size 15 x 45 sq.ft. with three repeats. The trial will be conducted in Sep-Oct. The pest population will be recorded before 24 hours and after 72 hours and 7 days of spray by taking 15 bolls of 5 randomly selected plants per plot. Phyto-toxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 72 hrs and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.

EFFICACY OF DIFFERENT INSECTICIDES AGAINST DUSKY COTTON BUG (*OXYCARENUS LAETUS*)

Insecticides	Dose rate/acre	Pre-Treatment DCB	Post Treatment DCB				24HAA	48 HAA	72 HAA	7 DAA
			24HAA	48 HAA	72 HAA	7 DAA				
Refree 5% SC (Fipronil)	480	5.47	2.13	1.83	1.67	2.30	67.63 D	72.04 DEF	74.26 BCD	75.35 BC
Karifos 40% EC (Chlorpyrifos)	750	4.47	2.03	1.93	1.77	2.30	69.29 CD	70.52 EF	72.84 CD	75.37 BC
Lesenta 85% WG (Imidacloprid+Fipronil)	65 gm	4.27	1.33	1.00	0.97	1.50	79.67 A	84.71 A	85.18 A	83.89 A
Capital Plus 41.7% (Betacyfluthrin + Triazophos)	500	5.07	1.80	1.50	1.20	1.47	72.73 BCD	77.17 BCD	81.61 AB	84.14 A
Verdict 52 % EC (Profenofos + Lambda-cyhalothrin)	1000	6.07	1.70	1.47	1.07	1.93	74.25 ABC	77.61 BCD	83.61 A	79.25 ABC
Tyron 50% EC (Profenophos) + Lambda-Cyhalothrin	1000+330	6.10	1.43	1.33	1.17	1.77	78.35 AB	79.79 ABC	82.07 AB	80.95 AB
Cydox 36% EC(Deltamethrin + Triazophos)	1000	5.97	1.67	1.27	1.00	1.87	74.71 ABC	80.76 AB	84.76 A	80.13 AB
Launcher 20% SL (Imidacloprid)	250	5.73	4.07	2.80	2.47	3.83	38.49 F	57.49 G	61.98 E	58.93 E

Picador 10% EC (Bifenthrin)	330	5.80	1.83	1.63	1.27	2.10	72.23 BCD	75.11 CDE	80.55 ABC	77.42 BC
Curacron 50% EC (Profenophos)	1000	5.47	1.73	1.80	2.17	3.07	73.60 ABCD	72.58 DEF	66.54 DE	67.31 D
Sannitox 40% EC (Dimethoate)	400	5.07	3.40	3.07	2.70	4.00	48.56 E	53.45 G	58.44 E	57.38 E
Talent 48% SC (Thiacloprid)	100	5.57	4.53	3.80	3.57	5.30	31.76 G	42.51 H	45.14 F	43.52 F
Karate 2.5 EC (Lambda- Cyhalothrin)	330	5.37	2.03	2.17	1.70	2.27	69.39 CD	67.01 F	73.91 BCD	75.76 BC
Gallent 10% WP (Lambda- Cyhalothrin)	62.5 g	5.03	2.17	1.50	1.33	2.40	67.17 D	77.16 BCD	79.50 ABC	73.85 C
Oshin 20% SG (Dinotefuran)	100	6.23	3.30	3.10	2.60	3.20	50.03 E	52.62 G	60.01 E	65.75 D
Check		6.23	6.63	6.60	6.50	9.40	0.00 H	0.00 I	0.00G	0.00 G
LSD @ 5%							6.44	5.59	8.58	5.84

18	TITLE:	EFFICACY OF NEW INSECTICIDES AGAINST ARMYWORM (SPODOPTERA SPP.) IN COTTON CROP
	OBJECTIVES:	To evaluate the comparatively effective insecticides against armyworm and their impact on beneficial fauna (Standardization).
	RESEARCH WORKERS	
	DURATION:	Regular feature
	LOCATION:	Faisalabad
	TREATMENTS/	Available new insecticides
	METHODOLOGY:	Cotton crop will be sown in the research area of ERI, Faisalabad, in RCB. Design, having three repeats. Insecticides will be evaluated against armyworm and the larval population will be recorded before treatment and then after 3 and 7 days of spray from 5 randomly selected plants per plot. Phyto-toxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 72 hrs and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.
	PREVIOUS YEAR RESULTS	First year

19	TITLE:	EFFICACY OF NEW INSECTICIDES AGAINST PINK BOLLWORM IN COTTON CROP
	OBJECTIVES:	To evaluate the comparatively effective insecticides against pinkbollworm and their impact on beneficial fauna (Standardization).
	RESEARCH WORKERS	
	DURATION:	Regular feature
	LOCATION:	Faisalabad
	TREATMENTS/	Available new insecticides
	METHODOLOGY:	Cotton crop will be sown in the research area of ERI, Faisalabad, in RCB. Design, having three repeats. Insecticides will be evaluated against pinkbollworm and the pest infestation will be recorded before treatment and then after 3 and 7 days of spray from 5 randomly selected plants per plot. Phyto-toxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 72 hrs and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.

Treatments	Dose/hlw (ml/gm)	Pre-Treatment PBW Infestation %	Post treatment PBW Infestation %		Reduction in PBW Infestation (%)		Bio-Controls Survival %	
			72 HAA	7 DAA	72 HAA	7 DAA	72 HAA	7 DAA
Deltamax 36% EC (Deltamethrin+Triazophos)	600 ml/ac	17.33	4.16	6.026	81.746 A	80.49 AB	60.11 AB	70.20 ABCD
X-Tall 43.6% EC (Leufenuron+Indoxacarb+Triazophos)	1000 ml/ac	15.46	3.49	5.51	83.021 A	80.09 ABC	56.27 B	66.67 CD
Proclaim 1.9 EC (Emmamectin benzoate)	200 ml/ac	18.66	7.22	8.21	70.73 BC	75.46 D	64.34AB	74.94 AB
Sozo 40% EC (Triazophos)	1000 ml/ac	17.86	4.50	5.56	80.90 A	82.50 A	62.54 AB	76.54 A
Karate 2.5% EC (Lambda-cyhalothrin)	330 ml/ac	17.60	6.02	6.96	73.32 B	77.65 BCD	57.24 B	66.85 CD
Kando 24.7% SC (Thiamethoxam+ Lambda- Cyhalothrin)	330 ml/ac	16.26	7.77	9.43	63.97 D	67.76 E	60.24 AB	63.40 D
Diplomate 40% EC (Triazophos)	1000 ml/ac	16.33	7.28	9.33	65.30 CD	67.38 E	59.46 B	72.76 ABC

Compass 25% WP (Bifenthrin+Nitenpyram)	250 gm/ac	17.60	6.86	9.12	69.88 BCD	70.81 E	61.35 AB	68.11 BCD
Blink 20% SC (Emmamectin benzoate+ Pyriproxyfen)	200 ml/ac	21.60	9.06	9.12	68.15 BCD	76.48 CD	68.31 A	77.23 A
Check	—————	14.67	19.47	26.42	0.00 E	0.00 F	0.00 C	0.00 E
					6.22	4.66	8.05	7.42

20	TITLE:	EFFICACY OF NEW ACARICIDES AGAINST MITES ON COTTON
	OBJECTIVE:	To evaluate comparative effectiveness of new acaricides against cotton mites and their impact on beneficial fauna (Standardization).
	RESEARCH WORKERS	
	DURATION:	Regular Feature
	LOCATION:	Faisalabad
	TREATMENTS:	Available new acaricides
	METHODOLOGY:	Cotton crop will be sown in the research area of Entomological Research Institute, Faisalabad in RCB. Design, having plot size 15 x 27 sq.ft. with three repeats. Available acaricides will be tested for the effective control of mites in cotton. Data will be recorded 24 hours before and after 3 and 7 days of spray from 15 randomly selected upper, middle and lower leaves of 15 plants per plot. Phyto-toxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 3 and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.

EFFICACY OF DIFFERENT ACARICIDES AGAINST MITES ON COTTON

	Treatments	Dose/hl w (ml/gm)	Pre- Treatment Mites/leaf	Post treatment Mites/leaf		Mortality % After		Bio-Controls Survival %	
				72 HAA	7 DAA	72 HAA	7 DAA	72 HAA	7 DAA
T1	Concept Plus 35% EC (Pyriproxyfen+ Acephate+Fenpyproximate)	750ml	12.99	2.65	3.49	82.4 4 AB	80.2 2 AB	57.83 BC	62.37 CDE
T2	Unique-M 5% EC (Fenproximate)	200ml	13.02	2.82	3.53	81.2 7 AB	79.8 5 AB	55.89 BC	55.10 F

T3	Vibrant Super 23 % SC (Chlorfenapyr 18%+ Fenpyroximate 5%)		13.69	2.49	3.13	83.4 1 A	82.1 5 A	60.23 BC	59.22 DEF
T4	Virtual 10 % SC (Chlorfentazine + Azocyclotine)	350 ml	13.27	2.89	3.93	80.7 9 ABC	77.6 1 ABC	58.17 BC	57.81 EF
T5	Orchid 13.3% EW (Abamectin+Imidacloprid)	200 ml	14.60	3.41	4.33	77.4 0 BC	75.4 4 BC	62.64 B	64.45BCD
T6	Style 22 % SC (Abamectin+Chlofenapyr)	200 ml	12.13	3.14	4.00	79.1 2 ABC	77.3 4 ABC	51.73 C	68.11 B
T7	Coral 36% SC (Chlofenapyr)	100ml	13.36	2.65	3.47	82.4 4 AB	80.1 4 AB	59.48 BC	60.37 DEF
T8	Pirate 36% SC (Chlorfenapyr)	75 ml	13.32	2.82	3.47	81.2 7 AB	80.2 2 AB	57.83 BC	67.23 BC
T9	Temper 20 % EW (Bifenthrin+Pyridaben)	250ml	14.11	2.47	3.27	83.6 5 A	81.3 5 A	58.55 BC	57.54 EF
T10	Cherry (Chlorfenapyr+Emmamectin)	250ml	13.02	2.65	3.33	82.4 4 AB	80.9 5 AB	60.23 BC	57.60 EF
T11	Dolo Power 80% WDG (Diafenturon)	150	13.69	3.69	4.80	75.8 7 CD	72.5 6 CD	57.62 BC	57.53 EF
T12	Patern 10 % WDG (Chlorfenapyr)	350 gram	13.60	2.57	3.47	82.9 9 A	80.2 1 AB	62.21 B	64.42 BCD
T13	Compass 25% WP (Bifenthrin + Nitenpyram)	250 ml	14.27	4.40	5.87	71.0 6 D	66.7 7 D	51.73 C	68.11 B
T14	Foxal 36% SC (Chlorfenapyr)	100 ml	12.13	2.73	3.47	81.8 1 AB	80.2 1 AB	54.74 BC	57.78 EF
T15	Foxal 50% WDG (Chlorfenapyr)	75 ml	13.36	2.38	3.27	84.2 2 A	81.3 5 A	58.44 BC	64.49 BCD
T16	Check		13.36	15.1 3	17.6 2	0.00 E	0.00 E	100.0 0 A	100.00 A
LSD @ 5%						5.31	5.9	8.42	5.29

21	TITLE:	EFFICACY OF NEW INSECTICIDES AGAINST COTTON MEALYBUG
	OBJECTIVE:	To evaluate different new insecticides against cotton mealybug and their impact on beneficial fauna (Standardization)
	RESEARCH WORKERS	
	DURATION:	Regular Feature

	LOCATION:	Faisalabad
	TREATMENTS:	Available new insecticides
	METHODOLOGY:	The experiment will be conducted at farmer's field in RCB. Design, with three repeats. Available insecticides will be tested against mealybug in cotton crop. Data will be recorded before treatment and then after 3 and 7 days of spray from 15 tagged, 10 cm twigs of 15 plants per plot. Phyto-toxicity effects such as burning of leaves and plants per plot of tested insecticides will also be observed after 72 hrs and 7 days of application. Beneficial's (predators) data will also be recorded by observing population of Beneficial's (predators) on 5 randomly selected plants per plot.
	PREVIOUS YEAR RESULTS	First year
22-TITLE:	STUDIES ON POPULATION DYNAMICS OF PINK BOLLWORM ON BT GENOTYPES OF COTTON	
OBJECTIVES:	To know appearance period of pink bollworm on cotton for better management	
RESEARCH WORKERS		
DURATION:	2015-16	
LOCATION:	Multan	
METHODOLOGY	The trial will be conducted with the coordination of Cotton Botanist, CRS Multan. Two cotton Bt genotypes (MNH-992 and 998) will be selected for this study. From these genotypes the rosette flowers will be recorded from 25 plants selected at random per treatment. Whereas in case of bolls the data will be recorded by plucking 50 bolls per treatment from randomly selected plants at fortnight intervals throughout the cotton season. The plucked bolls will be kept in hot and cool chamber for 4-5 days. The bolls will be opened with sharp knife and count the population of Pink bollworm larvae. The collected data will be compiled and correlated with weather factors.	
23-TITLE:	IMPACT OF PLANT SPACING ON INSECT PEST COMPLEX,VIRUS AND YIELD OF COTTON VARIETY BT 886	
OBJECTIVES:	To evaluate best planting distance with less insect attack, low virus infestation and more yield	
RESEARCH WORKERS		
DURATION:	2015-16	
LOCATION:	Multan	

METHODOLOGY		The trial will be conducted with the coordination of Cotton Botanist, CRS Multan. The bt cotton 886 will be sown at p x p distance 6, 12, 18 and 24 inches having three repeats under RCBD. The sucking pests Whitefly, Jassid and Thrips population will be recorded from 15 leaves selected at random from 15 plants per plot. The leaves will be taken from upper, middle and lower portion of randomly selected plants. The data regarding bollworms (spotted, pink and american) larvae will be recorded from 10 plants per plot selected at random by observing whole the fruiting parts. The population of RCB (red cotton bug) will be recorded from 10 plants per plot. Similarly DCB (dusky cotton bug) population will be recorded from 10 open bolls selected at random. Finally, the data will be compiled and analyzed statistically.
PreviousYear's Results		1st year
24	TITLE:	SCREENING OF CODED NON-BT GENOTYPES (NCVT) OF COTTON AGAINST INSECT PEST COMPLEX
	OBJECTIVES:	To know the severity of bollworms and sucking insect pests on non Bt genotypes of cotton
	RESEARCH WORKERS	
	DURATION:	2014-15
	LOCATION:	Multan
	TREATMENTS METHODOLOGY:	The trial will be conducted with the coordination of Cotton Botanist, CRS Multan. The NCVT trial having coded non-Bt genotypes will be sown in RCBD, replicated thrice at Cotton Research Station, Multan. The sucking pests Whitefly, Jassid and Thrips population will be recorded from 15 leaves selected at random from 15 plants per plot of 10 coded genotypes. The leaves will be taken from upper, middle and lower portion of selected plants. The data regarding larvae of Spotted and American Bollworms will be recorded from 10 randomly selected plants per plot at weekly intervals. Finally, the data will be compiled and analyzed statistically.

DATA REGARDING MEAN POPULATION OF SUCKING INSECT PESTS AND BOLLWORMS

Coded cotton genotypes	Av population of sucking pests /leaf			BOLLWORMS		
	Jassid	Whitefly	Thrips	AV. No. OF LARVAE PER PLANT of SBW	Percent infested bolls by PBW larvae	AV. No. OF LARVAE PER PLANT of ABW
V1	2.76ab	11.61ab	1.01bcd	0.13bc	25.00d	0.14ab
V2	2.59ab	7.57cde	0.97bcd	0.14abc	60.00ab	0.00e
V3	3.14ab	6.57e	0.84bcd	0.13bc	25.00d	0.00e

V4	3.30ab	8.19cde	1.36bc	0.20abc	20.00d	0.00e
V5	3.03ab	8.79bcde	1.00 bcd	0.20abc	50.00abc	0.00e
V6	3.72a	9.44bcde	1.07 bcd	0.06c	65.00a	0.03de
V7	3.45ab	9.76abcd	1.33bcd	0.25ab	36.00bcd	0.16ab
V8	3.16ab	7.25de	3.08a	0.20abc	30.00cd	0.19a
V9	3.06ab	9.95abcd	0.78cd	0.33a	60.00ab	0.00e
V10	2.39b	8.60bcde	0.81cd	0.21abc	50.00abc	0.00e
V11	3.08ab	10.52abc	0.94bcd	0.21abc	25.00d	0.12bc
V12	3.56ab	10.60abc	0.66d	0.23abc	30.00cd	0.07cd
V13	3.16ab	12.74a	1.52b	0.22abc	20.00d	0.00e
Tukey HSD At 5%	0.35	0.85	0.18	0.05	6.57	0.01
F-value	2.24	8.59	21.81	3.20	12.60	40.44

	INSECTS					
	Av population of sucking pests /leaf			Av Number of Larvae per plant of		%age infested bolls by
	JASSID	WHITEFLY	THRIPS	SBW	ABW	PBW
Maximum	V6 (3.72)	V13 (12.74)	V12 (0.66)	V9 (0.33)	V8 (19.00)	V6 (65.00)
Minimum	V10 (2.39)	V3 (6.57)	V12 (0.66)	V6 (0.06)	V2,V3,V4,V5, V9,V10,V13 (0.00)	V1,V3,V11 (25.00), V4,V13 (20.00)

25-TITLE:	SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PESTS COMPLEX
OBJECTIVES:	To find out the resistant variety/cultivar against insect pest complex of cotton.
RESEARCH WORKERS	
DURATION:	2014-2015
LOCATION:	Multan
METHODOLOGY:	The cotton genotypes supplied by the Entomological Research Institute, Faisalabad will be sown in the research area of Cotton Research Station, Multan. The experiment will be laid out in RCB Design having three repeats. Whitefly, jassid and thrips population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants. Attack of bollworms will be recorded by examining all fruiting bodies of 5 randomly selected plants /plot. Attack of Pink Bollworm will be observed by dissecting 25

randomly selected bolls per plot and % age of Virus infestation will also be calculated. Finally the data will be compiled and subjected to statistical analysis.

Previous Year's Results

Varieties	Average per leaf population of Sucking Insect Pests of Cotton			Average per plant population of bollworms			% age of Virus Infestation
	Jassid	Whitefly	Thrips	Spotted	% of Pink	American	
A1	1.47 i-r	0.49a-c	0.78bc	0.00e	19.00d-f	0.00d	13.30rs
A2	1.60 g-p	0.53a	0.27cd	0.00 e	7.00j-l	0.00d	18.80pq
A3	1.34 j-r	0.45 a-d	0.47 cd	0.20c	25.00cd	0.15b	20.00o-q
A4	2.56 d-j	0.85 a-d	0.11d	0.00 e	17.00 e-h	0.00d	12.20s
A5	3.25bcd	1.08 a-d	1.36ab	0.46a	19.00 d-g	0.00d	28.90jk
A6	2.49 d-l	0.83a-d	0.09d	0.00	9.00 i-k	0.00d	19.00pq
A7	1.83 f-m	0.61 a-d	0.37 cd	0.00 e	13.00 g-j	0.00d	90.90b
A8	2.75 c-g	0.92ab	0.15d	0.00 e	21.00 c-e	0.00d	25.60 j-m
A9	3.85a-c	1.28 a-d	1.39a	0.00 e	14.00 f-i	0.00d	22.00m-q
A10	0.44 o-r	0.15 a-d	0.40 cd	0.00 e	25.00c	0.00d	23.10m-p
A11	4.36ab	1.45 a-d	0.34 cd	0.00 e	17.00 e-h	0.00d	11.40s
A12	1.78 f-m	0.59 a-d	0.43 cd	0.00 e	17.00 e-h	0.00d	29.70jk
A13	2.04 e-l	0.68 a-d	0.40 cd	0.00 e	6.00kl	0.00d	48.60g
A14	2.58d-j	0.86 a-d	0.24 cd	0.33b	5.00kl	0.00d	22.50m-p
A15	1.71 f-m	0.57 a-d	0.57 cd	0.00 e	9.00i-k	0.00d	20.80n-q
A16	2.89c-f	0.96 a-d	0.54 cd	0.00 e	6.00kl	0.00d	36.80 hi
A17	2.55 d-j	0.85 a-d	0.41 cd	0.00 e	14.00 f-i	0.00d	25.00k-n
A18	3.49a-d	1.16 a-d	0.46 cd	0.00 e	13.00 g-j	0.00d	41.40h
A19	2.47 d-l	0.82 a-d	0.28 cd	0.00 e	11.00h-k	0.00d	19.90opq
A20	3.56a-d	1.19 a-d	0.28 cd	0.00 e	17.00 e-h	0.00d	25.00 k-n
A21	0.65 m-r	0.22 d	0.27 cd	0.00 e	17.00 e-h	0.00d	29.20 jk
A22	4.69a	1.56 a-d	0.46 cd	0.00 e	11.00 h-k	0.00d	75.00d
A23	2.84c-g	0.95 a-d	0.29 cd	0.00 e	25.00c	0.00d	47.20g
A24	2.60 c-g	0.87 a-d	0.39 cd	0.00 e	17.00 e-h	0.00d	22.60m-p
A25	1.29 k-r	0.43 a-d	0.36 cd	0.00 e	22.00c-e	0.15b	24.30 l-o
A26	2.31 d-l	0.77 a-d	0.31 cd	0.00 e	17.00 e-h	0.00d	23.80mno
A27	3.48a-d	1.16 a-d	0.50 cd	0.16d	13.00 h-j	0.00d	93.90b
A28	0.47 n-r	0.16 a-d	0.44 cd	0.00 e	11.00 h-k	0.00d	36.70 hi
A29	3.56a-d	1.19 a-d	0.41 cd	0.00 e	16.00 e-h	0.00d	17.50qr
A30	1.53 h-r	0.51 a-d	0.46 cd	0.00 e	14.00 f-i	0.00d	73.70d
A31	0.36 qr	0.12 d	0.54 cd	0.00 e	21.00 cde	0.00d	36.00 i
A32	3.53a-d	1.18 a-d	0.54 cd	0.00 e	8.00 i-l	0.00d	100.00a

A33	1.70 f-m	0.57 cd	0.44 cd	0.00 e	7.00jkl	0.00d	93.50b
A34	0.41 pqr	0.14 a-d	0.37 cd	0.00 e	2.00l	0.00d	11.00s
A35	2.69 c-g	0.90 a-d	0.39 cd	0.00 e	22.00 cde	0.00d	62.00e
A36	1.67 f-m	0.56 bcd	0.44 cd	0.00 e	13.00 g-j	0.00d	30.00j
A37	2.47 d-l	0.82 a-d	0.61 cd	0.00 e	19.00 def	0.00d	80.40c
A38	2.51 d-k	0.84 a-d	0.53 cd	0.00 e	17.00 e-h	0.00d	13.70rs
A39	1.22 l-r	0.41 a-d	0.34 cd	0.00 e	21.00 cde	0.00d	22.60m-p
A40	4.25ab	1.42 a-d	0.46 cd	0.00 e	45.00ab	0.20c	35.10 i
A41	3.54a-d	1.18 a-d	0.41 cd	0.00 e	51.00a	0.22a	29.00jkl
A42	0.65 m-r	0.22 cd	0.49 cd	0.00 e	19.00d-g	0.00d	25.00 k-n
A43	2.62 c-g	0.87 a-d	0.50 cd	0.00 e	21.00 cde	0.26a	29.40 jk
A44	1.54 h-r	0.51 a-d	0.50 cd	0.00 e	13.00 g-j	0.00d	82.60c
A45	3.23bcd	1.08 a-d	0.32 cd	0.00 e	11.00 h-k	0.00d	55.00f
A46	2.43 d-l	0.81 a-d	0.36 cd	0.00 e	26.00c	0.00d	100.00a
A47	0.31 r	0.10 cd	0.31 cd	0.00 e	41.00b	0.00d	37.50hi
Tuc.	0.3086	0.2923	0.1448	6.60203	1.5165	0.0145	1.1621
F-value	27.00	2.71	5.27	354.50	79.75	30.85	1033.89

	INSECTS							% age of Virus Infestation
	Av population of sucking pests /leaf			Av Number of Larvae per plant of		Rosette flower of	%age infested bolls by	
	JASSID	WHITEFLY	THRIPS	SBW	ABW	PBW	PBW	
Maximum POP.	A22 (4.69)	A2 (0.53)	A9 (1.39)	A5 (0.46)	A41 (0.22)	0.00	A41 (51.00)	A46,A32 (100.00)
MinimumPOP.	A47 (0.31)	A21 (0.22) and A31 (0.12)	A47 (0.31)	A31- A47 (0.00)	A44- A47,A4- A24 (0.00)	0.00	A34 (2.00)	A11 (11.40)

26-TITLE:	EFFECT OF TWO DOSES OF SOME NEW CHEMISTRY INSECTICIDES AGAINST DUSKY COTTON BUG, <i>OXYCARENUS</i> SPP. (HEMIPTERA: OXYCARENIDAE)
OBJECTIVES:	To find out the most effective insecticides dose against Dusky Cotton Bug.
RESEARCH WORKERS	
DURATION:	2014-15
LOCATION:	Multan

TREATMENTS:	T-1= Imidacloprid 200 SL@ 250gm T-2= Imidacloprid 200 SL @ 300gm T-3= Acetamiprid 20SP @125gm T-4= Acetamiprid 20SP@150gm T-5= Pyramid 10SL@ 200ml T-6= Pyramid 10SL @ 250ml T-7= Tracer 240SC@ 50ml T-8= Tracer 240SC@ 75ml T-9= Pirate 360 SC@ 100ml T-10= Pirate 360 SC@ 150ml T-11=Lescenta 85WG@ 65g T-12=Control
METHODOLOGY :	The experiment will be laid out in Randomized Complete Block Design with three replications of each treatment in area of Cotton Research Station, Multan. The above mentioned new chemistry insecticides will be sprayed on cotton crop. Data regarding population of Dusky Cotton Bug will be recorded from each plot before spray and then after 24 , 72 and 168 hours after spray by counting both adults and nymphs from 5 opened bolls of five randomly selected plants. Average percent mortality will be calculated. Finally, the data will be compiled and analyzed statistically .
Previous Year's Results	

DATA REGARDING PERCENT MORTALITY OF DUSKY COTTON BUG

Sr.No.	INSECTICIDES	DOSE/ ACRE	OPEN BOLLS/ PLANT	24 HOURS	72 HOURS	168 HOURS
1.	Imidacloprid 200SL	100gm	14.70	33.93a	52.48a	40.68a
	Imidacloprid 200SL	200gm	11.40	26.21d	43.43bc	29.71b
2.	Acetamiprid 20SP	65gm	19.00	27.75cd	44.42bc	21.13c
	Acetamiprid 20SP	125gm	19.90	28.49bcd	46.47b	15.55f
3.	Pyramid 10SL	50ml	13.70	30.93abcd	48.25ab	16.38f
	Pyramid 10SL	100ml	18.20	32.49abc	46.74b	25.25cd
4.	Tracer 240SC	25ml	18.40	33.11ab	45.38bc	40.18a
	Tracer 240SC	50ml	17.00	35.37a	52.66a	29.79b
5.	Pirate 360SC	50ml	4.65	27.85cd	41.10c	26.39bc
	Pirate 360SC	100ml	9.10	31.65abc	31.34d	21.85de
6.	Control		9.10	4.47e	3.43e	2.35g
Tuckey's HSD at 5%.				4.37	6.24	4.14
F-value.				4.09	5.29	15.57

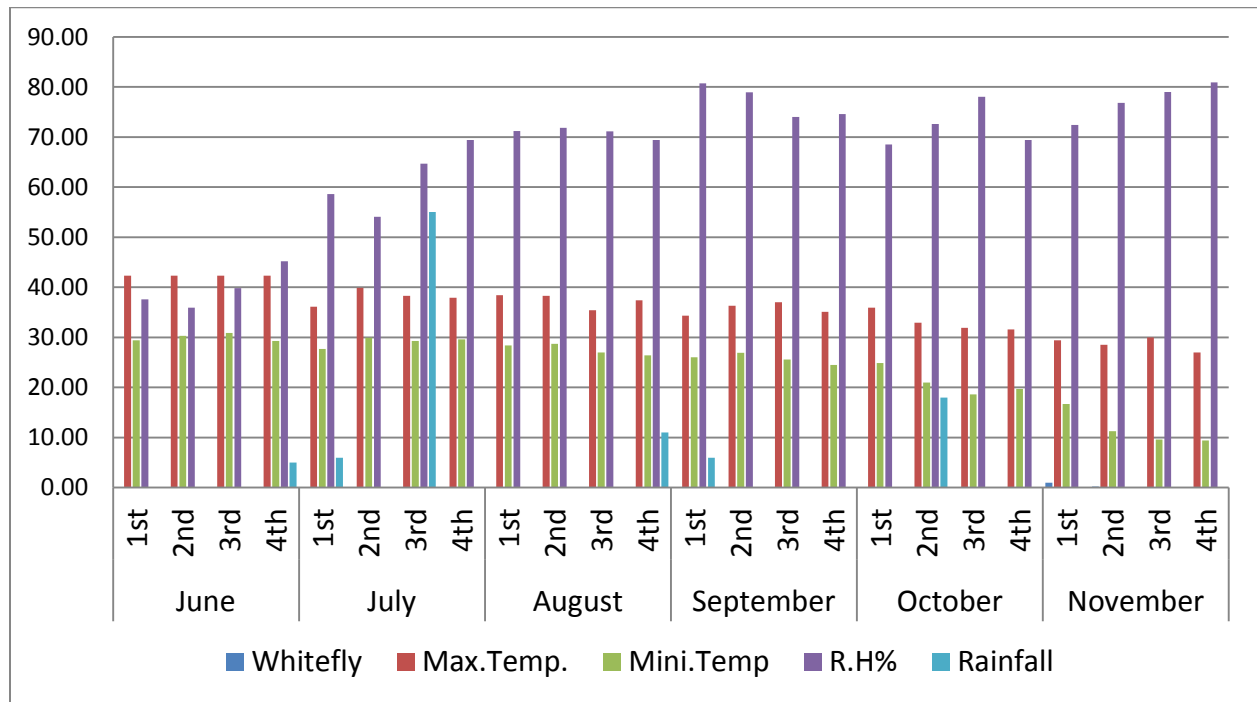
27-TITLE:	STUDIES ON THE POPULATION DYNAMICS OF INSECT PEST COMPLEX ON BT. COTTON 886
OBJECTIVES:	To know population fluctuations of insect pests of cotton on the Bt. cotton.
RESEARCH WORKER(S):	Tauseef Khan Babar
DURATION:	2014-15
LOCATION:	Multan

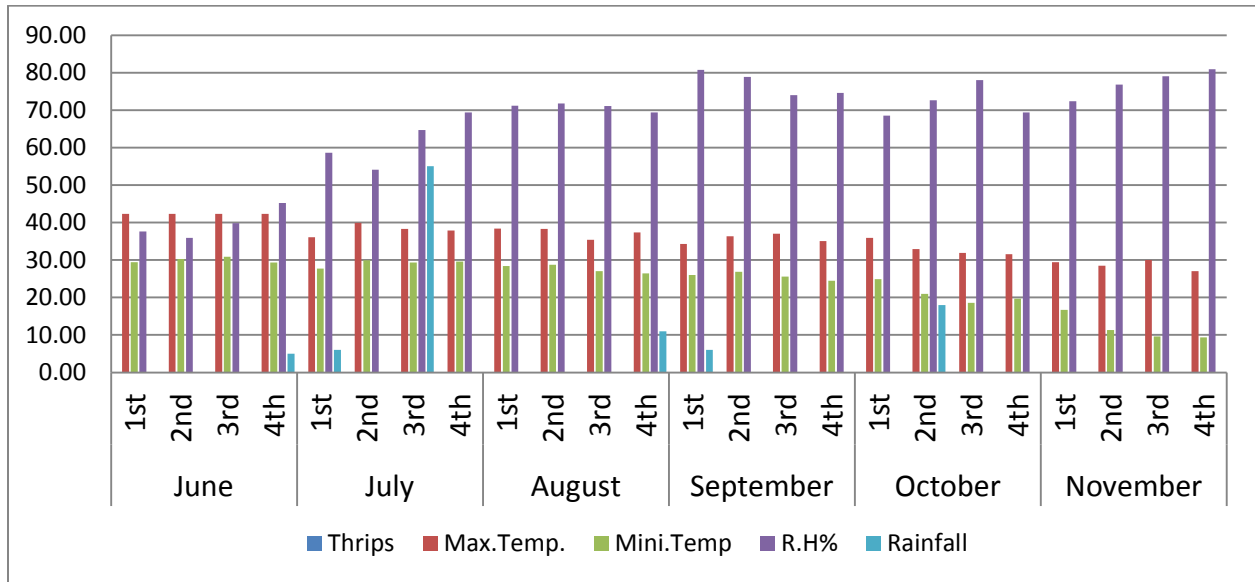
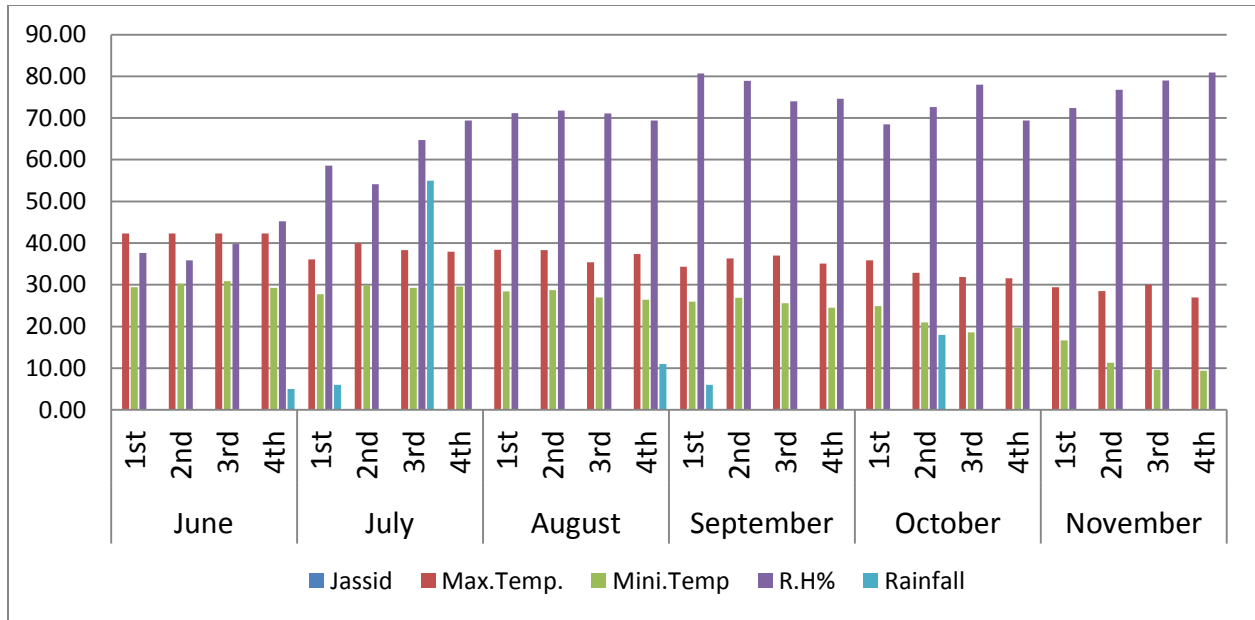
TREATMENTS/ METHODOLOGY:	The trial will be conducted with the coordination of Cotton Botanist, CRS Multan. Bt. cotton crop will be kept under observation throughout the crop season. Data regarding jassid, thrips and whitefly population will be recorded at weekly interval by observing 15 randomly selected upper, middle and lower leaves of 15 plants per plot. Red Cotton Bug and Dusky Cotton Bug population will be recorded from 10 randomly selected plants on per plant basis and per opened boll basis at weekly intervals. The data regarding larvae of Spotted and American Bollworms will be recorded from 10 randomly selected plants per plot at weekly intervals. Temperature and Relative Humidity data will also be recorded. Finally, the data will be compiled and analyzed statistically.
-------------------------------------	--

Previous Year's Results	
--------------------------------	--

POPULATION DYNAMICS OF INSECT PESTS OF COTTON									
Month	Week	Whitefly	Jassid	Thrips	DCB	Max.Temp.	Mini.Temp.	R.H%	Rainfall
June	1st	3.10	2.22	2.67	0.85	42.30	29.40	37.60	0.00
	2nd	2.78	2.64	1.49	0.09	42.30	30.30	35.90	0.00
	3rd	3.51	1.20	3.84	0.11	42.30	30.90	39.80	0.00
	4th	0.84	0.69	1.98	0.14	42.30	29.30	45.20	5.00
July	1st	2.94	6.76	9.98	1.18	36.10	27.70	58.60	6.00
	2nd	2.04	0.00	0.00	0.00	39.90	29.90	54.10	0.00
	3rd	4.18	0.66	0.56	0.03	38.30	29.30	64.70	55.00
	4th	1.82	0.44	1.95	9.71	37.90	29.60	69.40	0.00
August	1st	2.10	0.29	0.68	9.51	38.40	28.40	71.20	0.00
	2nd	1.60	0.73	1.14	10.79	38.30	28.70	71.80	0.00
	3rd	3.06	2.13	4.33	30.04	35.40	27.00	71.10	0.00
	4th	3.77	0.00	0.00	0.00	37.40	26.40	69.40	11.00
September	1st	3.25	0.76	0.56	51.83	34.30	26.00	80.70	6.00
	2nd	4.97	0.87	0.81	63.02	36.30	26.90	78.90	0.00

	3rd	6.53	0.42	1.51	34.01	37.00	25.60	74.00	0.00
	4th	6.94	0.76	0.55	19.56	35.10	24.50	74.60	0.00
October	1st	1.97	0.84	0.71	20.12	35.90	24.90	68.50	0.00
	2nd	1.41	0.73	0.83	37.71	32.90	21.00	72.60	18.00
	3rd	1.10	0.00	0.00	0.00	31.90	18.60	78.00	0.00
	4th	1.11	0.19	0.00	51.51	31.60	19.70	69.40	0.00
November	1st	1.00	0.21	0.11	64.17	29.40	16.70	72.40	0.00
	2nd	0.25	0.37	0.11	42.93	28.50	11.30	76.80	0.00





PEST	WEEK	MONTH	TEMPERATURE		RELATIVE HUMIDITY (%)	RAINFALL (MM)
			MAXIMUM TEMPERATURE (C)	MINIMUM TEMPERATURE (C)		
JASSID	-0.33 (0.12)	-0.37 (0.07)	0.20 (0.35)	0.24 (0.25)	-0.37 (0.08)	-0.01 (0.95)
WHITEFLY	0.06 (0.77)	-0.33 (0.12)	0.41 (0.04)	0.53 (0.00)	-0.06 (0.77)	0.17 (0.43)
THRIPS	-0.20 (0.35)	-0.46* (0.02)	0.29 (0.17)	0.35 (0.09)	-0.37 (0.07)	-0.04 (0.82)
DUSKY COTTON BUG	0.16 (0.45)	0.63* (0.00)	-0.69* (0.00)	-0.68* (0.00)	0.50* (0.01)	-0.17 (0.44)

	Non Significant					Non Significant
29.	TITLE:	SCREENING OF NEW COTTON GENOTYPES AGAINST INSECT PESTS AND CLCV INCIDENCE				
	OBJECTIVE:	To find out less susceptible cotton genotypes against insect pests and CLCV.				
	RESEARCH WORKER:	Zafar Ullah Shah				
	DURATION:	Regular feature				
	LOCATION:	Bahawalpur				
	TREATMENTS/ METHODOLOGY:	New genotype supplied by the breeders will be sown and kept under observation. Whitefly, jassid and thrips population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants. Cotton Leaf Curl Virus incidence will also be recorded by taking all healthy and affected plants/plot. Population of Cotton Mealy Bug will be recorded from 10 cm twigs of 10 randomly selected plants/plot. Attack of bollworms will be recorded by examining all fruiting bodies of 5 randomly selected plants / plot.				
	PREVIOUS YEAR'S RESULTS:					
	Genotypes	W.fly/leaf	Jassid / leaf	Thrips / leaf	PBW (%)	CLCV (%)
	V-1	3.40 c-e	1.40 a-d	9.13 c-h	40.0 a-f	9.07 a-j
	V-2	2.87 a-e	0.86 ab	5.13 a-c	62.22 g	3.92 a-c
	V-3	2.27 a-d	1.0 a-c	13.53 h-o	61.11 fg	13.47 g-n
	V-4	3.27 b-e	1.73 b-d	11.47 e-j	56.67 e-g	14.81 j-o
	V-5	3.27b-e	1.13 a-d	14.13 i-o	45.19 c-g	9.22 b-j
	V-6	3.0 b-e	1.87 cd	9.93 d-i	48.33 d-g	13.47 g-n
	V-7	4.93 fg	1.20 a-d	9.87 d-i	32.12 a-d	7.67 a-f
	V-8	3.07 b-e	1.0 a-c	17.73 o	28.33 a-d	11.45 f-m
	V-9	2.20 a-d	1.27 a-d	14.13 i-o	31.43 a-d	14.11 i-o
	V-10	2.20 a-d	1.0 a-c	3.0 a	19.39 ab	3.62 ab
	V-11	2.73 a-e	1.93 d	10.80 d-j	34.44 a-e	11.86 f-m
	V-12	2.87 a-e	1.47 a-d	13.0 f-n	40.0 a-f	19.61 o-q
	V-13	2.27 a-d	1.40 a-d	12.87 f-m	22.73 a-c	22.46 pq
	V-14	2.87 a-e	1.93 d	15.20 j-o	37.17 a-e	15.71 k-o
	V-15	3.13 b-e	1.27 a-d	11.87 e-j	31.81 a-d	9.38 b-j
	V-17	2.87 a-e	1.67 a-d	9.60 c-i	30.0 a-d	15.76 k-o

V-18	3.67 ef	1.67 a-d	17.33 m-o	25.0 a-c	16.16 l-o
V-19	3.67 ef	1.13 a-d	10.40 d-i	41.11 b-g	10.12 d-k
V-20	3.0 b-e	1.20 a-d	12.26 e-k	43.48 c-g	8.91 a-i
V-21	1.67 a	1.53 a-d	8.53 b-f	36.67 a-e	3.33 a
V-22	3.13 b-e	1.47 a-d	13.13 g-o	56.67 e-g	6.65 a-f
V-23	3.27 b-e	1.60 a-d	10.80 d-j	48.89 d-g	9.75 d-j
V-24	2.27 a-d	0.80 a	12.07 e-j	45.19 c-g	7.68 a-f
V-25	2.80 a-e	1.60 a-d	16.73 k-o	35.45 a-e	13.97h-o
V-26	2.60 a-e	1.27 a-d	11.53 e-j	41.11 b-g	15.73 k-o
V-27	3.47 de	1.33 a-d	12.47 e-l	39.17 a-f	7.88 a-g
V-28	2.53 a-e	1.20 a-d	17.47 no	20.0 ab	16.19 l-o
V-29	2.27 a-d	1.40 a-d	12.73 e-l	50.0 e-g	10.85 e-l
V-30	2.13 a-c	1.20 a-d	8.73 b-g	36.67 a-e	11.90 f-m
V-31	2.0 ab	1.0 a-c	4.40 ab	30.0 a-d	5.08 a-d
V-32	4.87 fg	1.20 a-d	9.0 c-h	30.0 a-d	16.70 m-p
V-33	2.93 a-e	1.80 cd	10.40 d-i	41.48 b-g	11.54 f-m
V-34	2.60 a-e	1.80 cd	8.20 b-e	40.0 a-f	8.25 a-h
V-35	2.80 a-e	1.33 a-d	8.80 b-g	33.33 a-d	11.68 f-m
V-36	3.27 b-e	1.80 cd	6.80 a-d	28.33 a-d	11.84 f-m
V-37	3.20 b-e	1.73 b-d	8.20 b-e	43.33 c-g	5.46 a-e
V-38	3.67 ef	1.80 cd	6.40 a-d	18.33 a	9.41 c-j
V-39	3.0 b-e	1.60 a-d	10.47 d-i	28.53 a-d	9.48 c-j
V-40	5.73 g	1.0 a-c	12.13 e-j	20.0 a-b	10.57 d-k
V-41	2.67 a-e	1.27 a-d	9.87 d-i	26.67 a-d	10.23 d-k
V-42	2.73 a-e	1.20 a-d	12.80 f-m	33.33 a-d	11.87 f-m
V-43	2.33 a-d	1.40 a-d	11.47 e-j	31.67 a-d	15.56 k-o
V-44	3.13 b-e	1.87 cd	9.80 d-i	60.95 fg	7.71 a-g
NIBGE-7	2.80 a-e	1.40 a-d	12.13 e-j	40.0 a-f	18.81 n-q
NIBGE-6	3.07	1.0	16.87 l-o	18.33 a	24.07 q
FH-142	2.80	1.53	12.93 f-n	41.67 b-g	7.41 a-f
LSD 5%	1.32	0.91	4.57	22.67	5.76

**SUMMARY TABLE OF THE DATA REGARDING SCREENING OF NEW COTTON GENOTYPES
AGAINST INSECT PEST COMPLEX**

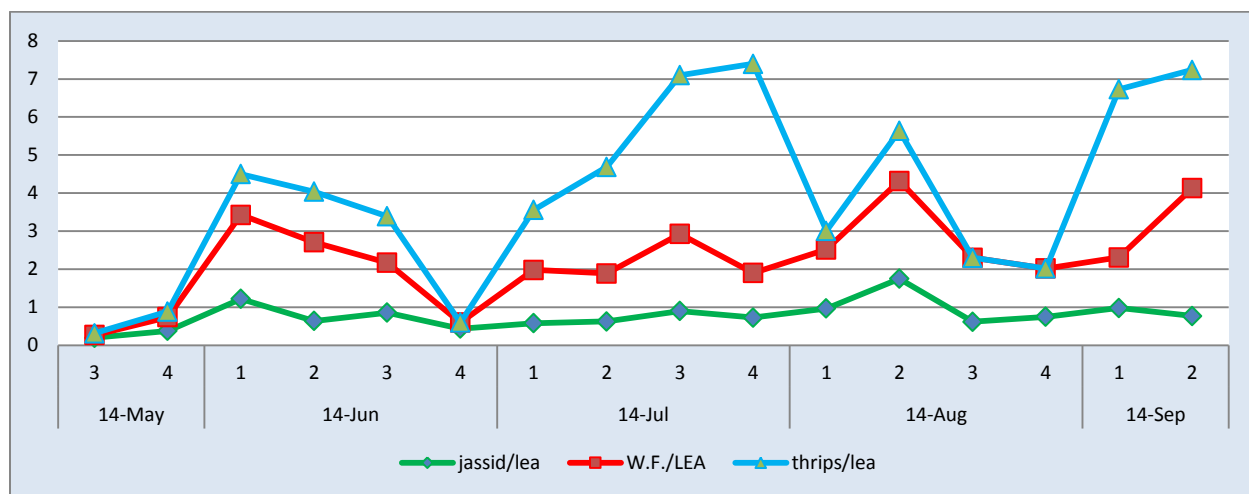
	Whitefly/Leaf	Jassid/Leaf	Thrips/Leaf	PBW %	CLCV %
Genotypes with maximum pest population	V40(5.73) V7(4.93)	V11(1.93) V14(1.93) V6(1.87) V44(1,87) V33(1.80) V34(1.80)	V8(17.73) V28(17.48) V18(17.33) Nibge-6(16.87)	V2(62.22) V3(61.11) V44(60.95) V4(56.67) V22(56.67)	NIBGE-6(24.07) V13(22.46) V32(16.70)
Genotypes with minimum pest population	V21(1.67) V31(2.0) V30(2.13)	V24(0.80) V2(0.86)	V10(3) V31(4.40) V2(5.13) V38(6.40)	V38(18.33) NIBGE-6(18.33) V10(19.39) V40(20.0) V13(22.73)	V21(3.33) V2(3.92) V31(5.08) V37(5.46)
Pest Population range	(1.67-5.73)	(0.80-1.93)	(3.0-17.73)	(18.33-62.22)	(3.33-24.07)

30. TITLE	EFFICACY OF DIFFERENT STICKY MATERIALS AGAINST SUCKING INSECT PESTS ON COTTON CROP
OBJECTIVE:	To find out most effective and long lasting sticky material for sticky traps
RESEARCH WORKER:	Zafar - Ullah Shah
DURATION:	2013-15
LOCATION:	Bahawalpur
TREATMENTS:	T1 = Used motor oil T2 = Petroleum jelly T3 = Molasses + water T4 = Motor oil + guar flour(simple) T5 = Motor oil + guar flour(Heated) T6 = Motor oil + Molasses(simple) T7 = Motor oil + Molasses(Heated) T8 = Motor oil + wheat flour(simple) T9 = Motor oil + wheat flour(Heated) T10 = Grease + water(boiled) T11 = Grease +broza

METHODOLOGY:	Yellow sticky traps smeared with above mentioned materials will be installed at the canopy height in the cotton crop sown in the area of Regional Agricultural Research Institute, Bahawalpur. The design will be RCB with three repeats. Net plot size will be 25' x 50' Data regarding sucking insect pests captured will be recorded from these traps at weekly interval for one month. These traps will be refreshed by the respected material after each data.					
PREVIOUS YEAR'S RESULT						
	POP. AFTER 72 HOURS			POP. AFTER 7DAYS		
TREATMENTS	Whitefly/sq inch	jassid/sq inch	thrips/sq inch	Whitefly/sq inch	jassid/sq inch	thrips/sq inch
T1 =Used mobile oil	37.67 c	-	-	19.66 C	-	-
T2 = Petroleum jelly	85.0 a	-	-	0.00 E	-	-
T3=Molasses+water	3.0 g	-	-	3.00 DE	-	-
T4=Mobileoil+guarflour(simple)	32.0 d	-	-	21.33 BC	-	-
T5=Mobileoil+guarflour(Heated)	40.33 c	-	-	0.00 E	-	-
T6=Mobileoil+Molasses(simple)	20.33 e	-	-	24.33 B	-	-
T7=Mobileoil+Molasses(Heated)	2.67 g	-	-	3.66 DE	-	-
T8=Mobileoil+wheat flour(simple)	21.67 e	-	-	5.33 D	-	-
T9=Mobileoil+wheatflour(Heated)	50.33 b	-	-	74.33 A	-	-
T10 = Grease	9.33 f	-	-	4.33 D	-	-
T11=Grease + Broza	2.67 g	-	-	2.33 DE	-	-
Lsd 5 %	8.11	-	-	4.15	-	-

31	TITLE	STUDIES ON THE POPULATION DYNAMICS OF JASSID, THRIPS AND WHITEFLY ON BT COTTON.
	OBJECTIVES	To observe the population trends of jassid, thrips and whitefly during the crop season.
	RESEARCH WORKER(S):	Zafarullah Shah
	DURATION:	Regular Feature
	LOCATION:	Bahawalpur
	TREATMENTS/ METHODOLOGY:	Bt cotton crop will be kept under observation throughout the crop season at three locations i.e. Faisalabad, Bahawalpur and Multan. Data regarding jassid ,thrips and whitefly population will be recorded at weekly interval by observing 15 randomly selected upper, middle and lower leaves of 15 plants per plot. Temperature and Relative Humidity data will also be recorded.

POPULATION DYNAMICS OF JASSID, THRIPS AND WHITEFLY ON BT COTTON AT BAHAWALPUR



Correlation of sucking insect pests of cotton with weather factors

Weather Factors	Avg Jassid/Leaf	Avg Thrips/Leaf	Avg Whitefly/Leaf
Maximum Temperature (°C)	-0.0541	-0.0821	-0.0128
Minimum Temperature (°C)	0.3240	0.0440	0.3806
Relative Humidity %	0.1292	0.4390	0.3276

INSECT PESTS OF OIL SEEDS

31- TITLE:	IMPACT OF PLANTING DATES ON THE INSECT PEST POPULATION OF SUNFLOWER
OBJECTIVE	To determine whether late planting or early planting reduce the percentage of insect pest infestation
RESEARCH WORKERS	
DURATION	2015-16
LOCATION	Faisalabad
TREATMENTS	Dates of sowing 7-1-2015, 14-1-2015, 21-1-2015, 28-1-2015, 4-2-2015, 11-2-2015, 18-2-2015, 25-2-2015, 4-3-2015, 11-3-2015, 18-3-2015

METHODOLOGY

The experiment will be conducted at area of oilseed research institute, AARI, Faisalabad. . The trial will be laid out in a randomized complete block design (RCBD) with three replication on sunflower hybrid FH-331. Plot size will be 4.5 m in width 9.66 m in length and will consist of six rows with 0.75-m row spacing and 0.23- m plant spacing. Alley width between plots and replications will be 1.5 m. Eleven dates of sowing from 7-1-2015 to 18-3-2015 @ weekly intervals will be sown. Data regarding sucking insect pest will be recorded from fifteen leaves per plot (each from upper, middle, and lower leaf). Data regarding *Helicoverpa armigera* will be recorded from five plants per plot. Data will be analyzed statistically

PREVIOUS YEAR'S RESULTS

Means of population of sucking insect pests occurring on sunflower with respect to different date of plantings.

Treatments	Aphid/leaf	Jassid/leaf	Whitefly/leaf	Dusky cotton bug/leaf	leafFalse chinch bug/leaf
Jan. 8 th , 2014	11.67 A	6.70 A	2.00 F	0.13 G	0.00 E
Jan. 15 th , 2014	10.62 A	5.05 CD	2.24 F	0.17 G	0.00 E
Jan. 22 nd , 2014	8.93 B	4.90 CD	2.83 DE	0.23 G	0.12 D
Jan. 29 th , 2014	8.10 B	5.14 CD	2.80 E	0.36 F	0.51 A
Feb. 5 th , 2014	5.87 C	5.18 CD	3.28 C	0.43 F	0.49 A
Feb. 12 th , 2014	2.50 D	5.40 C	4.02 B	0.45 EF	0.12 D
Feb. 19 th , 2014	0.33 E	3.70 E	4.56 A	0.56 E	0.31 C
Feb. 26 th , 2014	0.35 E	4.84 D	4.17 B	0.71 D	0.16 D
March 3 rd , 2014	0.13 E	5.30 CD	3.24 C	0.85 C	0.44 B
March 12 th , 2014	0.10 E	5.02 CD	3.43 C	1.14 B	0.48 AB
March 19 th , 2014	0.01 E	6.05 B	3.17 CD	2.30 A	0.52 A
LSD @ 0.05	0.42	0.37	0.31	0.09	0.48

Means of population of mining and chewing insect pests occurring on sunflower with respect to different date of plantings.

Treatments	Leaf miner/plant	Head borer/plant	Semilooper/plant	Armyworm/plant
Jan. 8 th , 2014	5.58 A	3.20 G	3.39 E	0.00 E
Jan. 15 th , 2014	4.40 B	4.21 EF	5.44 C	0.00 E
Jan. 22 nd , 2014	3.14 C	4.38 DE	6.06 B	0.00 E
Jan. 29 th , 2014	2.04 D	4.48 D	7.03 A	0.00 E
Feb. 5 th , 2014	1.11 EF	4.83 C	4.42 D	0.00 E
Feb. 12 th , 2014	1.18 E	4.13 F	4.23 D	0.00 E
Feb. 19 th , 2014	0.73 F	4.11 F	3.21 E	0.00 E
Feb. 26 th , 2014	0.00 G	5.44 B	0.75 F	0.52 D

March 3 rd , 2014	0.00 G	5.60 B	0.84 F	0.75 B
March 12 th , 2014	0.00 G	6.07 A	0.73 F	0.61 C
March 19 th , 2014	0.00 G	6.27 A	0.56 F	0.97 A
LSD @ 0.05	0.19	0.1	0.21	0.61
32	TITLE:	SCREENING OF NEW SESAME GENOTYPES AGAINST INSECT PESTS		
	OBJECTIVE	<ul style="list-style-type: none"> To screen out new sesame genotypes against insect pests. To generate data for varietal approval. 		
	RESEARCH WORKERS			
	DURATION	Regular feature		
	LOCATION	Faisalabad		
	TREATMENTS/METHODOLOGY	New genotypes will be sown in the Entomological Research Institute, Faisalabad. The experiment will be laid out in RCB Design having three repeats. Aphid and jassid population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants.		

SCREENING OF NEW SESAME GENOTYPES AGAINST INSECT PESTS

S. No.	Variety/Line	Avg Jassid/Leaf	Armyworm infestation %	Avg Whitefly/Leaf
1	NS-22	0.40 A	16.73 A	3.73 AB
2	NS-103-1	0.23 BC	16.20 A	2.13 CD
3	NS-44-SP-1	0.13 C	14.70 A	2.40 CD
4	NS-2	0.33 AB	9.33 B	1.93 D
5	TH-5	0.37 A	7.03 BC	3.13 BC
6	TH-6	0.40 A	4.79 C	4.27 A
	LSD @ 5%	0.87	3.28	0.93
33	TITLE:	EFFICACY OF DIFFERENT ENTOMOPATHOGENIC MICROBES AGAINST SEASAME POD BORER AND THEIR EFFECT ON POLLINATORS		
	OBJECTIVE	<ul style="list-style-type: none"> To find out the most effective entomo-pathogenic microbe against sesame pod borer and their effect on pollinators 		
	RESEARCH WORKERS			
	DURATION	2015-17		
	LOCATION	Entomological Research Institute, Faisalabad.		

	TREATMENTS/ METHODOLOGY	<p>1=Bacillus sp @ 5% 2=Metarhizum sp @ 5% 3=Beauveria bassiana @ 5% 4=Bacillus sp + Metarhizum sp @ 5% 5=Bacillus sp + Baveria basinia @ 5% 6=Spinosad 240 SC @ 40 ml/ Acre 7=Control</p> <p>Experiment will be laid out in randomized complete block design (RCBD) with three replication in the research area of entomological research institute, Faisalabad. Entomo-pathogenic microbes will be applied individually and in integrated manners, at the insect pest appearance @ 5%. Data will be recorded from 15 randomly selected plants from each treatment. Percentage fruit infestation and larval population will be recorded and analyzed statistically.</p>
34	TITLE:	EFFECTIVENESS OF DIFFERENT ENTOMOPATHOGENIC MICROBES AND PLANT EXTRACTS AGAINST SUNFLOWER HEAD MOTH AND THEIR EFFECT ON POLLINATORS
	OBJECTIVE	: to find out the most effective entomo-pathogenic against sunflower head moth and their effect on pollinators.
	RESEARCH WORKERS	
	DURATION	2015-17
	LOCATION	Oil-seed Research Institute, Faisalabad.
	TREATMENTS/ METHODOLOGY	<p>1=Bacillus sp @ 5% 2=Metarhizum sp @ 5% 3=Beauveria bassiana @ 5% 4=Neem @ 5% 5=Dhatura @ 5% 6=Spinosad 240 SC @ 40 ml/ Acre 7=Control</p> <p>Experiment will be laid out in randomized complete block design (RCBD) with three replication in the research area of entomological research institute, Faisalabad. Entomo-pathogenic microbes will be applied individually and in integrated manners, at the insect pest appearance @ 5%. Data will be recorded from 15 randomly selected plants from each treatment. Percentage fruit infestation and larval population will be recorded and analyzed statistically.</p>
35	TITLE:	SCREENING OF NEW CASTOR BEAN GENOTYPES AGAINST INSECT PESTS
	OBJECTIVE	<ul style="list-style-type: none"> To screen out new castor bean genotypes against insect pests.

		<ul style="list-style-type: none"> To generate data for varietal approval.
	RESEARCH WORKERS	
	DURATION	Regular feature
	LOCATION	Faisalabad
	TREATMENTS/ METHODOLOGY	New genotypes will be sown in the Entomological Research Institute, Faisalabad. The experiment will be laid out in RCB Design having four repeats. Aphid and jassid population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants.

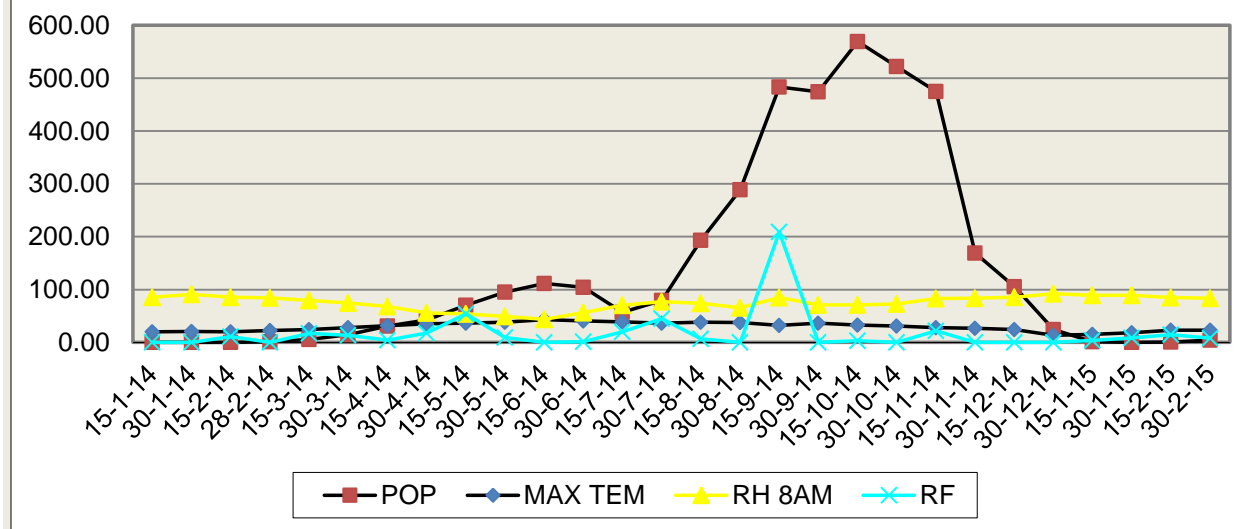
SCREENING OF NEW CASTOR BEAN GENOTYPES AGAINST INSECT PESTS

Variety/Line	Avg Jassid/Leaf	Avg Aphid/leaf
C-1 NIBGE-2012	1.45 A	2.20 A
C-2 NIAB Shoot	0.63 C	0.37 B
C-3 DS-30	1.10 B	0.50 B
LSD @ 5%	0.19	0.14

INSEC PEST OF FRUITS

36	TITLE	STUDY OF POPULATION DYNAMICS OF FRUIT FLY ON PHEROMONES TRAPS IN GUAVA ORCHARD
	OBJECTIVES	To know population fluctuations and its species in orchards throughout the years
	RESEARCH WORKERS	
	DURATION	2014-2015
	LOCATION	Faisalabad
	TREATMENTS / METHODOLOGY	Traps will be installed in the orchard at five different places. Methyl eugenol capsules will be placed in the traps. The captured fruit flies will be counted fortnightly throughout the year and will be correlated with weather factors. The capsules will be changed fortnightly. The data will be compiled and correlated with meteorological factors.
	PREVIOUSYEAR'S	

	RESULTS	
--	----------------	--



Correlations

	MAX	MINI	RF	RH
pop	-0.1346	0.3812	0.2955	-0.1155

37-TITLE	ATTRACTION OF FRUIT FLY TO DIFFERENT COLORS OF METHYLE EUGENOL TRAPS IN GUAVA FRUIT.
OBJECTIVE	To determine the most preferred color trap for fruit fly.
RESEARCH WORKERS	
DURATION	2015-2016
LOCATION	Faisalabad
TREATMENTS	T1: Red Traps T2: Yellow Traps T3: Green Traps T4: Blue Traps T5: White Traps T6: Control (Transparent Traps)
METHODOLOGY	Trial will be conducted in the area of Entomological Research Institute, Faisalabad in RCBD with three replicates. Different color Cylinder Traps of 500ml containing methyl eugenol (0.4ml) + Spinosad (1ml) will be hanged at 50 m distance on guava trees. Traps will be changed randomly at fortnightly interval. Data regarding trap population will be recorded at 15-days interval and will be subjected to statistical analysis.

RESULTS		First year
38	TITLE:	IPM of fruit fly in citrus orchard
	OBJECTIVES:	To find out the effective strategy against fruit fly
	DURATION:	2015-17
	LOCATION:	Faisalabad
	TREATMENTS / METHODOLOGY:	<p>T1= Hoeing and sanitation (April to December at 15- days interval under the tree canopy)</p> <p>T2 = Bait sprays (NF120)</p> <p>T3 = Dorsa lure (six traps/acre and septa will be changed at 15-days interval)</p> <p>T4= Methyl Eugenol (six traps/acre and septa will be changed at 15- days interval)</p> <p>T5= T1+T2+T3</p> <p>T6= T1+T2+T4</p> <p>T7= Control</p> <p>Trial will be conducted in the area of Horticultural Research Institute, Faisalabad in RCBD with three replicates. Hoeing and destruction of fallen fruits will be done from April to December. Other treatments will be applied from July to December .data on fruit fly infestation will be recorded from three trees of each treatment by counting 100 fruits on tree and fallen fruits on ground at 15-days intervals starting from August to December. Data so Obtained will be analyzed statistically to compare the treatments.</p>
39	TITLE:	Evaluation of different botanicals and chemical insecticide against citrus psylla, Diaphorina citri K. (Homoptera: Psyllidae).
	OBJECTIVES:	To find out the effective and safe treatment for the control of citrus psylla
	RESEARCH WORKERS	
	DURATION:	2015-17
	LOCATION:	Faisalabad

	TREATMENTS / METHODOLOGY:	<p>T1= Mineral oil (diver 97% @ 500ml/100litre water T2 = Neem leaf extract @5% T3 = Datura leaf extract @5% T4 = Imidacloprid@50ml/100litre of water T5= Lufenuron@100ml/100litre of water T6= Spinosad@20ml/100litre of water T7= Thiamethoxam@10g/100litre of water T8= Bifenthrin@50ml/100litre of water T9= Chlorantraniliprole@15ml/100litre of water T10= Control</p> <p>The trial will be conducted in the research area of Horticultural research institute, Faisalabad, in RCB design, with three replicates Data regarding citrus psylla population will be recorded before and then after 1, 3, 7 and 10- days interval by observing adult and nymphs from 10 randomly selected twigs of 30cm long each per plant. The percent mortality of the pest will be calculated and data will be analyzed statistically.</p>
		First Year
40	TITLE	COMPARATIVE EFFICACY OF SELECTIVE INSECTICIDES AGAINST CITRUS THRIPS, WHITEFLY, BLACK FLY, APHID, AND MEALYBUG.
	OBJECTIVE:	To evaluate the most effective insecticide for the control of citrus thrips and mealybug.
	RESEARCH WORKERS	Dr. Faisal Hafeez, Abdul Ghaffar
	LOCATION	Faisalabad
	DURATION	2015-16
	TREATMENTS	<p>T1= chlorfenapyr 360SC @. 100 ml/100 Ltr of water T2= Imidacloprid 200SL @. 250 ml/100 Ltr of water T3= Bifenthrin 10EC @ 125 ml/100 Ltr of water T4= Actara 25 WG (Thiamethoxam) @. 24 gm/100 Ltr of water T5=Dimethoate 40EC @ 200 ml/100 Ltr of water T6= Control</p>
	METHODOLOGY	Full grown citrus trees will be selected for this study. Experiment will be laid out in RCBD. A 3-acre block of trees containing the infestations of above insect pests will be selected. Data of insect pest population will be recorded before treatment and after 48 hrs, 72hrs and 7 days of the spray. Data will be analyzed statistically.
	PREVIOUS YEAR RESULTS	New experiment
41	TITLE	Performance of different types of pheromone traps for fruit fly capture in citrus and guava orchard

	OBJECTIVE:	To evaluate the most effective and economical pheromone trap for the control of fruit fly in citrus and guava orchards
	RESEARCH WORKERS	
	LOCATION	Toba Tek Singh
	DURATION	2014-15
	TREATMENTS	T1= Pet bottle trap locally made T2= Round plastic Jar T3=Triangular traps T4= Chemical control T5= Control (No trap and chemical control)
	METHODOLOGY	Pheromone traps of different shapes will be installed in citrus and guava orchard selected for fruit fly management in Toba Tek Singh and data regarding the trapped fruit fly in different traps will be recorded fortnightly and population trend of fruit fly and performance of the traps will be evaluated and compared with the chemical control and cost benefit ration will be calculated.
	PLAN OF WORK	<ol style="list-style-type: none"> 1. The trial will be conducted at at farmer field in RCBD with three replications 2. Pheromone traps containing methyl eugynol will be installed and the septa will be changed at 15 days intervals 3. Insecticide (Laser/ Statue) will be sprayed on pest appearance and will be repeated at 15 days interval 4. Data regarding fruit fly infestation will be recorded by taking 50 fruit from each treatment at 15 days interval in summer crop 5. Finally data will be analyzed statistically
	PREVIOUS YEAR RESULTS	First year
42	TITLE	INTEGRATED MANAGEMETN OF FRUIT FLY IN GUAVA ORCHARDS
	OBEJECTIVE	To develop an effective IPM strategy against fruit fly
	RESEARCH WORKERS	
	LOCATION Duration	Faisalabad 2015-16
	TREATMENTS/ METHODOLOGY	1-Collection of infested/fallen fruits and will buried deep in the soil+ Hoeing under the plant canopy

		<p>2-Installation of pheromone traps@ 6 traps/acre 3-Spot application of protein hydrolyzate @ 300ml+ 30 ml cyprmethrin 10EC +10 lit. water/hectare 4-Spray of Laser (cypermethrine + Dimethoate) @ 3 ml/lit.water 5-T1 + T2 6-T1 + T2 + T3 7- T1 + T2 + T3 + T4 8-control</p>
	PLAN OF WORK	<ul style="list-style-type: none"> • The trial will be conducted at HRI orchard and farmer field in RCBD with tree replications • Infested/fallen fruits will be collected and buried at daily basis at the depth of 3 to 4 feet • Hoeing under tree canopy will be done at 15 days intervals • Pheromone traps containing methyl eugynol will be installed and the septa will be changed at 15 days intervals • Spot spray of protein hydrolyzate bait will be done at 15 days interval • Insecticide will be sprayed on pest appearance and will be repeated at 10 days interval • Data regarding fruit fly infestation will be recorded by taking 100 fruit from each treatment at 15 days interval in summer crop • Finally data will be analyzed statistically
	PREVIOUS YEAR RESULTS	New experiment
43	TITLE:	INCIDENCE OF FRUIT BORER IN GUAVA ORCHARDS
	OBJECTIVES:	To find out the incidence and population level of fruit borer.
	RESEARCH WORKERS	Dr. Faisal Hafeez
	DURATION:	2015-16
	LOCATION:	Faisalabad,
	TREATMENTS	Available varieties
	METHODOLOGY:	Five trees from guava orchard will be randomly selected. Fifty fruits will be examined randomly from each tree for borer infestation. The data will be recorded at fortnightly interval.
	PPREVIOUS YEAR RESULTS	First Year
44-	TITLE:	SCREENING OF HIGH VALUE COMMERCIAL MANGO VARIETIES AGAINST FRUIT FLIES
	OBJECTIVES:	To evaluate mango varieties against fruit flies for better

		management
	RESEARCH WORKERS	
	DURATION:	2015-16
	LOCATION:	Multan
:	TREATMENTS/METHODOLOGY	The experiment will be laid out at Farmers field in Multan. The eight high value commercial varieties of Mango i.e. Malda, Dusehri, Langra, Chaunsa, Fajri, Ratual-12, Black Chaunsa and White Chaunsa, will be selected. For recording data infested fruits by fruit fly on mango trees in one square meter from four directions like east, west, north and south as well as whole fruits dropped under the tree (either due to fruit flies or some other reasons on the ground under the tree) will be counted separately and identified. There will be three trees per variety under RCBD. The recorded data will be compiled and analyzed statistically.
	Previous Year's Results	st 1 year
45	TITLE:	MANAGEMENT OF FRUITFLIES IN MANGO ORCHARD.
	OBJECTIVES:	i) To control fruit flies ii) Collection and identification of fruit flies
	RESEARCH WORKERS	iii)
	DURATION:	2015-2018
	LOCATION:	Multan
	TREATMENTS	T1=Collection of fallen fruits and burying deep in the soil T2=Hoeing under tree canopy T3=Use of pheromone traps @ 6traps/ acre T4= Spray of bio-pesticide T5= Check
	METHODOLOGY	The trials will be conducted in Multan at Farmers field. There will three acres block of mango. Six traps per acre will be installed in the orchard .. The fruit flies captured in the traps will be collected fortnightly intervals and will be identified .The septa will be changed fortnightly. The orchard will be kept clean by collecting all the fallen fruits and buried them in soil. The infested fruits will be kept in hot and cool chamber for rearing of fruit fly for the identification of their species. Hoeing under tree canopy will be done to destroy the hibernating larvae/pupae. And repeated at monthly interval. On the initiation of fruit flies attack the orchard will be sprayed with bio-pesticides. The data on fruit fly infested fruits will be recorded before spray and at 10 days intervals. Finally, the data will be analysed statistically..

	Previous Results	Year's 1st year
INSECT PESTS OF VEGETABLES		
46	TITLE:	Evaluation of Brinjal Genotypes against Brinjal fruit and Shoot Borer
	OBJECTIVES:	To Screen out new brinjal lines against fruit and shoot borer
	RESEARCH WORKERS	
	DURATION:	2014-2016
	LOCATION:	VRI, Faisalabad
	TREATMENTS METHODOLOGY	The Experiment will be conducted in research area of Vegetable Research Institute, Faisalabad. Different genotypes will be sown in Randomize Complete Block Design with three replicates. Data regarding Brinjal fruit and shoot borer infestation will be recorded at weekly interval from five randomly selected plants per plot. Finally data will be analyzed statistically
	Previous Results	Year's

Evaluation of Brinjal Genotypes against Brinjal fruit and Shoot Borer

S.No	Genotypes	% Infestation	Yield (T/ha)
1	Chhoto	19.7c	5.90
2	Jhansi	16.2 de	4.03
3	Galine	23.3b	3.96
4	Ab-317	17.9 d	4.16
5	Shamli	14.0 efg	8.00
6	Black pearl	8.8h	4.40
7	Twinkle star	5.0 i	1.80
8	Dilnasheen	13.7fg	11.70
9	Vrib-2013	26.4 a	10.70
10	Advanta f1-318	12g	5.80
11	Khbr-201	12.2 fg	10.03
12	Khbr-202	14.4 ef	5.83
13	Advanta f1-320	11.8 g	11.03

	Lsd at5%	2.29	
47	TITLE:	Non Chemical Control of Brinjal fruit and shoot borer(<i>Leucinodes orbonali</i>)	
	OBJECTIVES:	To find out suitable and effective strategy against the Brinjal fruit and shoot borer	
	RESEARCH WORKERS		
	DURATION:	2015-17	
	LOCATION:	Vegetable Research Institute Faisalabad	
	TREATMENTS METHODOLOGY	<p>T1: Collection and destruction of infested fruits and shoots in open field T2: Collection and destruction of infested fruits and shoots in 30 mesh nylon insect net T3: Release of <i>Trichogramma chilonis</i> @ 60 card(500 eggs/card) in open field T4: Release of <i>Trichogramma chilonis</i> @ 60 card(500 eggs/card) in 30 mesh nylon insect net T5: Rotation of field for Brinjal Cultivation T6: Cultivation of Brinjal on previous field T7: Cultivation of Brinjal as a Ratoon Crop T8: Control</p> <p>The trial will be laid out in RCBD with three replications. Weeding/ hoeing will be done at 15 days interval. collection and destruction of affected fruits will be done at each picking <i>Trichogramma</i> egg cards will be obtained from Bio-control laboratory, ERI, Faisalabad. Sixty cards each containing 500 eggs of <i>Trichogramma</i> will be released in the field. <i>Trichogramma</i> release will be done at the appearance of the pest and then further releases will be done at 15 days intervals. The insecticide will be applied when the pest infestation will reach at ETL. The number of application of insecticide will depend upon the severity of pest infestation.</p> <p>Data Collection Fruit infestation will be recorded from 5 selected plants by observing the all healthy and infected fruits at week interval and % infestation will be calculated and data so obtained will be analyzed statically.</p>	
	Previous Year's Results	1st year	
48	TITLE:	IPM of fruit fly in Bitter gourd.	
	OBJECTIVES:	To find out the effective strategy against fruit fly	

	RESEARCH WORKERS	
	DURATION:	2015-2016
	LOCATION:	Faisalabad
	TREATMENTS	T1=Hoeing+sanitation: T2=Bait sprays (protein Hydrolyzate (300ml) +Dipterex (30 grams)) T3=Male annihilation (Cue- lures + Spinosad 24 SC) 6 traps/acre T4=T1+T2 T5=T1+T3 T6=Control
	METHODOLOGY	Trial will be conducted in the research area of Vegetable Research Institute, Faisalabad in RCBD with three replicates. Hoeing and Collection of infested fruits will be done at 15-days interval. Bait spray consists of protein Hydrolyzate mixed with Dipterex. Baiting will be commenced when fruit formation starts. The septa of cue lure and Spinosad will be replaced after 15-days interval. Data will be subjected to statistical analysis. CBR will also be calculated.
	Previous Year's Results	First year
49	TITLE:	COMPARATIVE EFFECTIVENESS OF VARIOUS INSECTICIDES FOR THE CONTROL OF BRINJAL FRUIT BORER
	OBJECTIVES:	To find out the most effective insecticides against brinjal fruit borer
	RESEARCH WORKERS	
	DURATION:	2014-2015
	LOCATION:	Multan
	TREATMENTS	T1= Timer 1.9 EC@200ml/ Acre T2= Tracer 240 SC@60ml/Acre T3= Lufenuron 2 EC@200ml/ Acre T4= Chlorfenapyr 360SC@320ml/Acre T5= Voliam Flexi 3.00SC@80ml/Acre T6= Radiant 120 SC@80ml/Acre T7= Delegate 25 WG@30mg/Acre T8= Belt 480 SC@20ml/Acre T9= Control
	METHODOLOGY	The experiment will be conducted at the research area of Vegetable Research Sub Station, Multan/farmers field under RCB design with three repeats. The damaged fruits per plant

due to fruit borer will be counted and plucked. The insecticides will be sprayed on the brinjal crop. The data will be recorded before spray and then after 03, 05 and 07 days after spray. The percent mortality will be calculated. Finally the data will be compiled and subjected to statistical analysis.

Previous Year's Results

COMPARATIVE EFFECTIVENESS OF VARIOUS INSECTICIDES FOR THE CONTROL OF BRINJAL FRUIT BORER

INSECTICIDES			Percent reduction of damage Brinjal Fruit after		
TRADE NAME	COMMON NAME	Dose/100 lit. water	3 Days	5 Days	7 Days
Timer 1.9 EC	Emamectin benzoate	200ml/ Acre	61.38ab	70.06bc	63.93bc
Tracer 240 SC	Spinoside	60ml/Acre	38.41cd	73.81b	51.35cd
Lufenuron 2 EC	Lufenuron	200ml/ Acre	21.96d	15.10d	0.00e
Chlorfenapyr 360SC	Chlorfenapyr	320ml/Acre	49.86 bc	59.54c	50.27d
Voliam Flexi 3.00SC	Thiamethaxim + Chlorantraniliprole	80ml/Acre	76.33a	87.70a	83.54a
Radiant 120 SC	spintoram	80ml/Acre	66.86 ab	81.52ab	71.51ab
Delegate 25 WG	spintoram	30mg/Acre	35.58cd	15.60d	61.88bcd
Belt 480 SC	flubendamide	20ml/Acre	66.22 ab	75.02b	71.85ab
Control			1.45e	1.15e	2.71e
Tukey HSD at 5%			5.26	3.26	3.57
F-value			42.84	206.77	139.35

50	TITLE:	COMPARATIVE EFFECTIVENESS OF VARIOUS INSECTICIDES /ACARICIDES FOR THE CONTROL OF MITES ON BRINJAL			
	OBJECTIVES:				
	RESEARCH WORKERS				
	DURATION:	2015-2016			
	LOCATION:	Multan			
	TREATMENTS	Miticides/ Insecticides	Dose / 100 lit. water		
		1=Unique-M 5% EC (Fenproximate)	200ml		
		2=Mitoxin 55% SC(Fenbutatin Oxide)	350 ml		
		3=Nissuron 10% WP (Hexythiazox)	200 gm		
		4=Sindh mite 15% EC (Pyridabin)	600 ml		
		5=Pirate 36% SC(Chlorfenapyr)	75 ml		

		6=Polo500% SC(Diafenthuron) 7=Nava Star 56% EC (Bifenthrin+Abamectin) 8=Gallop 25% WP (Azocyclotin) 9=Control	200 ml 500 ml 75 gm
	METHODOLOGY	The experiment will be conducted at the research area of Vegetable Research Sub Station, Multan in RCB design with three repeats. Before the application The formulation of new chemistry insecticides/acaricides will be applied on the brinjal crop. The data regarding mites infestation will be recorded before and after 24, 72 and 168 hors of insecticides/acaricides application. Finally the data will be compiled and subjected to statistical analysis.	
	Previous Year's Results	First year	
INSECT PESTS OF SUGARCANE			
51	TITLE:	Varietal screening of different advanced lines of sugarcane against sugarcane black bug	
	OBJECTIVES:	To screen out resistant/tolerant lines of sugarcane against black bug	
	RESEARCH WORKERS		
	DURATION:	2013-15	
	LOCATION:	SRI Faisalabad	
	TREATMENTS / METHODOLOGY:	Advanced lines/candidate varieties sown at Sugarcane Resea Area Faisalabad will be screened against sugarcane black bug. randomly selected leaf sheaths will be examined from each p Trial will be laid out in RCBD with three repeats.	
52	TITLE:	EFFICACY OF DIFFERENT INSECTICIDES AGAINST SUGARCANE BLACK BUG	
	OBJECTIVES:	To find out the effective insecticides for the control of black bug.	
	RESEARCH WORKERS		
	DURATION:	2015-16	
	LOCATION:	Faisalabad	
	TREATMENTS	T1= Bifenthrin 10 EC @ 330ml/ acre T2= Fipronil @ 600ml/ acre T3= Carbosulfan 20 EC @ 300ml/ acre T4= Imidacloprid 20 SL @250ml/ acre T5= Dimethoate @ 300ml/ acre T6= Control (Water spray)	

	METHODOLOGY	The above mentioned treatments will be applied on ratoon crop. The trial will be conducted in RCBD replicated thrice. Data regarding black bug infestation will be recorded on per leaf sheath basis just before spray and then after 24 hours, 72 hours and 7 days of application by observing 10 randomly selected leaf sheaths per plot .
	Previous Year's Results	First Year
53	TITLE	COMPARATIVE INCIDENCE OF BORERS COMPLEX AND PYRILLA ON DIFFERENT ADVANCED LINES OF SUGARCANE
	OBJECTIVES	To screen out resistant/tolerant lines of sugarcane against pest complex.
	RESEARCH WORKERS	
	LOCATION	Faisalabad
	DURATION	Regular feature
	TREATMENTS/ METHODOLOGY	Advanced lines/candidate varieties sown at Sugarcane Research Area Faisalabad will be screened against sugarcane borers and sugarcane pyrilla. For borers data will be recorded on tiller infestation and internode damage basis where as pyrilla will be assessed by taking population on per leaf basis. Tiller infestation and internode damage will be recorded by counting healthy and damaged canes/internodes. Trial will be laid out in RCBD with three repeats.

	Varieties/Lines	%tiller infestation	%Top borer	%Stem borer	%Root borer	%Cumulative borers	Response
1	S2006-SP-93	1.74 ABC	0.00 D	11.50 B	1.347 EFGHI	12.84 B	HS
2	S2006-US-272	0.80 BCDE	0.00 D	4.83 HI	1.82 BCDEFGH	6.65 IJ	R
3	S2006-US-658	1.48 ABCD	0.00 D	4.95 HI	2.83 ABCDE	8.13 FGHI	LS
4	FD-19	0.64 DE	0.00 D	6.53 FGH	1.38 DEFGHI	7.58 GHI	R
5	M-34	0.61 DE	1.20 B	7.53 CDEFG	3.037 ABCD	11.78 BCD	HS
6	M-38	1.40 ABCD	0.90 BC	4.81 HI	3.04 ABCD	8.97 EFGH	LS
7	M-42	1.01 BCDE	0.34 D	8.67 CDE	4.33 A	13.34 B	HS
8	S2008-AUS-107	0.16 E	0.00 D	3.39 I	1.10 FGHI	4.49 K	R
9	S2008-AUS-129	2.21 A	0.00 D	7.703 CDEFG	1.037 FGHI	8.74 EFGH	LS
10	S2008-AUS-130	0.58 DE	0.00 D	9.283 C	3.067 ABC	13.02 B	HS
11	S2008-AUS-133	1.00 BCDE	0.00 D	6.93 EFG	0.367 HI	7.30 HI	R

12	S2008-AUS-134	0.87 BCDE	0.720 C	6.32 GH	1.07 FGHI	8.12 FGHI	LS
13	S2008-AUS-138	0.93 BCDE	0.00 D	8.900 CD	0.64 GHI	9.88 DEF	MS
14	S2008-AUS-190	1.82 AB	0.00 D	7.250 DEFG	1.79 BCDEFGH	9.04 EFGH	MS
15	S2009-SA-57	0.74 CDE	0.86 BC	6.98 EFG	1.61 CDEFGHI	9.46 EFG	MS
16	S2009-SA-79	1.44 ABCD	0.28 D	8.43 CDE	3.363 AB	12.410 BC	HS
17	S2009-SA-111	1.41 ABCD	1.90 A	13.360 A	1.85 BCDEFGH	17.78 A	HS
18	S2009-SA-169	0.70 CDE	0.00 D	8.25 CDEF	2.24 BCDEFG	10.63 CDE	S
19	CPF-247	1.85 AB	0.99 BC	3.77 I	0.00 I	4.76 JK	R
20	HSF-240	0.44 DE	0.00 D	3.75 I	2.6267 BCDEF	6.71 IJ	R
	cd 1	1.07	0.37	1.8	1.68	2.00	
2nd set							
	Variety/lines	tiller infestation(%)	top borer(%)	stem borer(%)	root borer(%)	cumulative borers(%)	Response
1	FD-17	1.08 B	0.33 B	3.27 DEF	4.09 CD	7.68 CDE	R
2	M-55	1.39 B	0.73 AB	6.35 BC	6.27 AB	13.35 A	HS
3	SA-41	1.98 AB	0.00 B	1.65 EF	3.70 CD	5.35 F	R
4	SA-8	3.55 AB	0.39 B	10.04 A	3.39 DE	13.81 A	HS
5	M 148	3.63 AB	0.00 B	3.27 DEF	4.99 BC	8.15 CDE	LS
6	SA-67	4.47 A	0.00 B	3.55 CDEF	3.08 DEF	6.96 EF	R
7	SA-171	4.10 A	0.00 B	3.88 BCDE	3.64 CDE	7.52 DE	R
8	SL96-128	4.06 A	1.99 A	4.75 BCD	2.14 EFG	8.88 BCD	LS
9	M-175	3.35 AB	0.44 B	1.59 EF	7.39 A	9.43 BC	MS
10	M-142	2.68 AB	0.54 B	6.71 B	3.34 DE	10.59 B	S
11	HSF240	2.21 AB	0.00 B	0.86 F	1.74 FG	2.60 G	R
12	CPF247	3.02 AB	0.00 B	1.537 EF	1.48 G	3.01 G	R
	cd 1	2.59	1.33	2.85	1.52	1.89	

R=Resistant(0.00-8.00%),LS=Less Susceptible (above8.01-9.00%) ,MS=Moderately Susceptible (above9.01-10.00%) ,S= Susceptible (above10.01-11.00%) ,HS=Highly Susceptible (above11.00%)

54	TITLE:	EFFICACY OF DIFFERENT GRANULAR INSECTICIDES AGAINST SUGARCANE BORERS
	OBJECTIVES:	To find out the effective insecticides for the control of borers.
	RESEARCH WORKERS	
	LOCATION:	Faisalabad
	DURATION:	Regular feature
	TREATMENTS:	Available new insecticides

	METHODOLOGY:	The above mentioned treatments will be applied at tillering stage. The trial will be conducted in RCBD replicated thrice. Data regarding borer infestation will be recorded on percentage tiller infestation basis.
	PREVIOUS YEAR'S RESULTS:	

EFFICACY OF DIFFERENT GRANULAR INSECTICIDES AGAINST SUGAR SUGARCANE BORERS

Insecticide	Dose /acre(Kg)	infestation(%)		
		Pretreatment	After 15 days	After 30days
Tara gold 5G	14	16.26	5.11 B	2.00 B
Furadan 3 G	14	13.13	4.46 B	2.25 B
Cartap 4G	14	15.34	6.18 B	1.75 B
Control	-	19.85	35.99 A	24.25 A
	Lsd 5%	NS	9.96	1.42
55		STUDIES ON THE POPULATION DYNAMICS OF SUGARCANE INSECT PESTS IN DIFFERENT LOCATIONS OF PUNJAB		
	Objective:	To determine the population fluctuation of major insect pests of sugarcane and their intensity throughout the crop season with main focus on early shoot borer		
	RESEARCH WORKERS			
	Duration:	2015-18		
	Location:	Faisalabad, Chiniot, Jhang, Bahawalpur at Farmer's field.		
	Methodology:	A block of five acres of sugarcane of the same variety will be selected in each District. Data regarding borers, pyrilla and whitefly will be recorded at fortnightly interval starting from 2nd week of April till crop harvest. The data so obtained will also be correlated with weather factors.		
	Previous years results	New experiment		
56.	Title	EFFECT OF GRANULAR INSECTICIDE APPLICATION ON WHITEFLY POPULATION USED FOR BORER CONTROL ON SUGARCANE VARIETY HSF-240		
	Objective:	To determine the effect of different granular insecticides on		

		whitefly population / incidence on sugarcane
	RESEARCH WORKERS	
	Researchers:	Muhammad Munir, Muhammad Latif & Abdul Ghaffar (ERI, Faisalabad)
	Duration:	2015-18
	Location:	Chiniot

Treatments: Insecticide application schedule kg ha⁻¹

#	Insecticide		st 1 application 45DAP	nd 2 application 90DAP	Total kg ha ⁻¹
	Trade Name	Generic name			
1.	Furadan 3 G	Carbofuran	20	40	60
2.	Refree 0.3 G	Fipronil	20	40	60
3.	Vertako 0.6 G	Thiamethoxam 0.4 G+ Chlorantraniliprole 0.2 G	10	10	20
4.	Fusion 4 G	Fipronil	15	30	45
5.	Control		-	-	-
	Methodology:	Trial will be conducted following RCBD at the farmer's field previously heavily infested with whitefly in Chiniot area. The treatments will be applied at recommended doses and time of application for borer control. Data regarding borer infestation and white fly will be recorded after 15 and 30 days of each application and then after 10 days interval till crop harvest.			
	Previous years results	New experiment			
57.		CHEMICAL CONTROL OF WHITEFLY ON SUGARCANE			
	Objective:	To find out comparatively more effective insecticide for the control of whitefly.			
	RESEARCH WORKERS	Muhammad Munir, Muhammad Latif (ERI, Faisalabad)			
	Duration:	2015-17			
	Location:	Anywhere heavily infested field in surroundings of Faisalabad			

Treatments:

#	Insecticides		Dose ml/acre
	Trade Name	Generic Name	
1.	Confidor 200SL	Imidacloprid	250 ml
2.	Dimethoate 40 EC	Dimethoate	400 ml
3.	Advantage 25EC	Carbosulfan	500 ml
4.	Refree 5 SC	Fipronil	480 ml
5.	Talstar 10EC	Bifenthrin	250 ml
6	Control	--	--

Methodology	Heavy infested field with whitefly will be selected for the trial. The insecticide will be applied with power knapsack sprayer. Data regarding whitefly population will be recorded before and then after 72 hours, 7 days, 10 days and 15 days of spray. Percentage reduction will be calculated on the basis of pretreatment. Data will be statically analyzed.
Previous years results	New experiment

INSECT PESTS OF RICE

58	TITLE:	VARIETAL RESISTANCE/SUSCEPTIBILITY OF RICE TO DIFFERENT INSECTS
	OBJECTIVE:	To determine the resistant varieties/lines against different rice insects.
	RSEARCH WORKER(S):	Zia Ullah
	DURATION:	2015-16
	LOCATION:	Sialkot/Pasrur
	TREATMENTS:	1. Available new varieties/lines
	METHODOLOGY:	Transplanted crop will be kept under observation during the season to record the insect pest population. In this regard data will be recorded at weekly intervals till maturity of the crop. Borer, leaf and plant hoppers and leaf folder infestation will be assessed on tillers / plant basis.
	PREVIOUS YEAR'S RESULTS:	First year.
59	TITLE:	EFFICACY OF DIFFERENT INSECTICIDES AGAINST BROWN PLANT HOPPER ATTACKING RICE CROP.
	OBJECTIVE:	To find out effective insecticides for the control of the pest.
	RSEARCH WORKER(S):	Zia Ullah

	DURATION:	2014-15				
	LOCATION:	Pasrur/Sialkot				
	TREATMENTS:	Available new insecticides				
	METHODOLOGY:	The trial will be conducted in RCBD with replications. The treatments will be applied on the appearance of pests. Data regarding pest population will be recorded before and then after 24, 72 hours and 7 days of spray by observing 15 randomly selected tillers per plot.				
Previous year results						
S. No.	Treatments	Dose/Acre(ml)	Pop./ Tiller			
			Pre	24hours	72 hours	7 days
1	Lambdacyhalothrin 2.5 EC	250	19.46	10.30b	8.70c	9.66b
2	Pyramid10 SL	200	24.19	18.97a	19.19a	9.62 b
3	Priority 10.8 SC	500	23.65	19.28a	19.48a	10.60 b
4	Imidachloprid 200 SL	250	20.26	13.73b	14.17b	10.08 b
5	Control	-	22.02	20.17a	20.70a	16.79 a
LSD5%			ns	4.13	5.10	4.17

INSECT PESTS OF STORED GRAINS

60	TITLE	DETECTION OF INSECT FRAGMENTS IN FLOUR BY DIFFERENT LIFE STAGES OF KHAPRA (COLEOPTERA:DERMESTIDAE
	OBJECTIVE:	To characterize the relationship between different levels of wheat infestation with larvae, pupae and pre-emergent female.
	RESEARCH WORKERS	Humaira Malik, Dr. Ibrar-ul-Haq
	DURATION:	2015-2016
	LOCATION:	Faisalabad
	TREATMENTS: METHODOLOGY:	The trial will be planned in CRD in stored grain laboratory ERI, Faisalabad. There will be 5 treatments including control with five replications. Insect culture will be prepared by adding 200 adults of khapra in 200 gm. of wheat by adjusting moisture at 13.5% by adding distilled water in glass jars capped with screen lids. 20 adults, larvae and pupae will be released in 100 gm. samples of uninfested wheat in glass jars. After a period of 40 days the samples will be sieved and the number of insect fragments will be counted by floatation method. . Finally the data will be analyzed

		statistically.																		
	PREVIOUS YEARS RESULTS	First year results.																		
60	TITLE	CONTROL OF TROGODERMA GRANARIUM AND TRIBOLIUM CASTANEUM BY MODIFIED ATMOSPHERE CREATED BY PLANT MATERIAL COMBUSTION.																		
	OBJECTIVE:	To evaluate the toxicity of smoke generated by partial combustion.																		
	RESEARCH WORKERS																			
	DURATION:	2015-2016																		
	LOCATION:	Faisalabad																		
	TREATMENTS:	<table border="1"> <thead> <tr> <th>Sr.#</th> <th>Plant material</th> <th>Rate kg/1000 cubic foot</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Tobacco</td> <td>2</td> </tr> <tr> <td>2</td> <td>Neem</td> <td>2</td> </tr> <tr> <td>3</td> <td>Akk</td> <td>2</td> </tr> <tr> <td>4</td> <td>Paddy husk</td> <td>2</td> </tr> <tr> <td>5</td> <td>Control</td> <td>-</td> </tr> </tbody> </table>	Sr.#	Plant material	Rate kg/1000 cubic foot	1	Tobacco	2	2	Neem	2	3	Akk	2	4	Paddy husk	2	5	Control	-
Sr.#	Plant material	Rate kg/1000 cubic foot																		
1	Tobacco	2																		
2	Neem	2																		
3	Akk	2																		
4	Paddy husk	2																		
5	Control	-																		
	METHODOLOGY:	The trial will be planned in CRD in stored grain laboratory ERI, Faisalabad. There will be 5 treatments including control with five replications. 50 adults of <i>Trogoderma granarium</i> and <i>Tribolium castaneum</i> will be obtained from same- age rearing. Adults of these species will be put into cloth sacks hung in sealed bottles which were later filled with smoke generated from plant material combustion. After 24, 36 and 48 hours of exposure to smoke, response of insects will be evaluated in terms of mortality. Finally the data will be analyzed statistically.																		
	PREVIOUS YEARS RESULTS	First year																		

INSECTICIDES RESISTANCE

62	TITLE	MONITORING OF INSECTICIDES RESISTANCE IN WHITE FLY(BEMESIA TABACI)
----	-------	--

	OBJECTIVE	To Determine the Present Level Of Resistance In White Fly		
	RESEARCH WORKERS	Dilbar Hussain, Muhammad Saleem		
	DURATION	Regular Feature		
	LOCATION	Faisalabad		
	TREATMENTS	TRADE NAME	COMMON NAME	
		Confidor 200 SL	Imidachloprid	
		Confidor 70WS	Imidachloprid	
		Rani 20SL	Acetamaprid	
		Dimogreen 40EC	Dimethoate	
		Polo 500SC	Diafenthuran	
		Movento 240 SC	Spirotetramate	
		Priority 10.8 % AS	Pyriproxifen	
	METHODOLOGY	<p>COLLECTION: White fly adult will be collected from 2ha. Block by zigzag manner to randomize collection by using aspirator. Adult white fly will be brought to Lab in glass vials.</p> <p>BIOASSAY: Bioassay will be done by leaf dip method Mortality will be recorded after 48 hours Probit analysis will be done to determine LC₅₀, LC₉₀ values.</p>		
	PREVIOUS YEAR'S RESULTS	Chemicals	LC ₅₀	LC ₉₀
		Confidor 200SL	606.17	8657.11
		Confidor 70WS	513.21	3365.91
		Rani 20SL	125.22	1493.11
		Dimethoate 40EC	37.11	178.11
		Diafenthuran	88.64	364.78
		Spirotetramate	33.9	106.32
63	TITLE	MONITORING OF INSECTICIDES RESISTANCE IN COTTON JASSID (AMRASCA DEVASTANS)		
	OBJECTIVE	To Determine The Present Level Of Resistance In Jassid		
	RESEARCH WORKERS	Dilbar Hussain, Muhammad Saleem		
	DURATION	Regular feature		
	LOCATION	Faisalabad		
	TREATMENTS	TRADE NAME	COMMON NAME	
		Confidor 200 SL	Imidacloprid	
		Confidor 70WS	Imidacloprid	
		Rani 20SL	Acetamiprid	
		Dimogreen 40EC	Dimethoate	
		Oshin 20 SG	Dinotefuran	

		Pyramid 10AS	Nitenpyram	
	METHODOLOGY	<p>COLLECTION: jassid adults will be collected from 2ha. Block by zigzag manner to randomize collection by using aspirator. Adult Jassid will be brought to Lab in glass vials.</p> <p>BIOASSAY: Bioassay will be done by leaf dip method Mortality will be recorded after 48 hours. Probit analysis will be done to determine LC₅₀, LC₉₀ values</p>		
	PREVIOUS YEAR'S RESULTS	Chemicals	LC ₅₀	LC ₉₀
		Confidor 200SL	2712.13	21327.78
		Confidor 70WS	631.321	6058.67
		Rani 20SL	280.01	2356.32
		Dimethoate 40EC	51.67	321.89
		Oshin 20 SG	34.17	109.56
		Pyramid10AS	37.98	117.67
64	TITLE	MONITORING OF INSECTICIDES RESISTANCE IN COTTON THRIPS (<i>THRIPS TABACI</i>)		
	OBJECTIVE	To Determine The Present Level Of Resistance In Thrips		
	RESEARCH WORKERS	Dilbar Hussain, Muhammad Saleem		
	DURATION	Regular feature		
	LOCATION	Faisalabad		
	TREATMENTS	TRADE NAME Confidor 200 SL Confidor 70WS Rani 20SL Dimogreen 40EC Tracer 240 SC Acephate25 WP	COMMON NAME Imidacloprid Imidacloprid Acetamiprid Dimethoate Spinosad Acephate	
	METHODOLOGY	<p>COLLECTION: Thrips adults will be collected from 2ha. Block by zigzag manner to randomize collection by using aspirator. Adult Thrips will be brought to Lab in glass vials.</p> <p>BIOASSAY: Bioassay will be done by leaf dip method Mortality will be recorded after 48 hours. Probit analysis will be done to</p>		

		determine LC ₅₀ , LC ₉₀ values		
PREVIOUS YEAR'S RESULTS	Chemicals	LC ₅₀	LC ₉₀	
	Confidor 200SL	1921.25	30242.2	
	Confidor 70WS	716.98	9767.56	
	Rani 20SL	179.09	2354.56	
	Dimethoate 40EC	56.87	298.53	
	Tracer240 Sc	43.98	97.55	
	Acephate25 WP	58. 37	147.67	

MISCELLANEOUS

65	TITLE:	SCREENING OF NEW GUAR GENOTYPES AGAINST INSECT PESTS
	OBJECTIVE	To screen out new guar genotypes against insect pests. To generate data for varietal approval.
	RESEARCH WORKERS	
	DURATION	Regular feature
	LOCATION	Faisalabad
	TREATMENTS/ METHODOLOGY	New genotypes provided by Regional Agricultural Research Station Bhawalpur will be sown in the Entomological Research Institute, Faisalabad. The experiment will be laid out in RCB Design having three repeats. Whitefly, jassid and aphid population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants.

SCREENING OF NEW GUAR GENOTYPES AGAINST INSECT PESTS

Guar Genotypes	Avg. Jassid/leaf	Avg. Whitefly/Leaf	Avg. Aphid/Leaf
S-5274	0.77 c	1.57 a	0.20 c
S-5299	0.75 c	0.57 d	0.47 ab
S-5394	0.93 bc	0.75 bcd	0.40 bc
S-5548	0.92 bc	0.62 cd	0.53 ab
S-5509	1.00 b	0.87 b	0.67 a

BR-90	0.90 bc	0.85 bc	0.67 a
BR-99	1.22 a	0.73 bcd	0.60 ab
LSD @ 5%	0.19	0.21	0.12
66	TITLE:	SCREENING OF NEW MUNG BEAN GENOTYPES AGAINST INSECT PESTS	
	OBJECTIVES:	To screen out comparatively less susceptible mung bean genotypes against insect pests. To generate data for varietal approval.	
	RESEARCH WORKERS		
	DURATION:	Regular Feature	
	LOCATION:	Faisalabad	
	TREATMENTS/ METHODOLOGY:	New genotypes supplied by Crop Sciences Institute, NARC, Islamabad will be sown in the Pulses Research Institute, Faisalabad. The experiment will be laid out in RCB Design having four repeats. Sucking insect pest population will be recorded from 15 leaves of 15 plants selected at random from upper, middle and lower portions of plants. Attack of pod borer will be recorded by examining all fruiting bodies of 5 randomly selected plants /plot.	
	PREVIOUS YEAR'S RESULTS:		

SCREENING OF NEW MUNG BEAN GENOTYPES AGAINST INSECT PESTS

S. No.	Genotype	Jassid/Leaf	Aphid/Leaf	Pod Borer (%)	Thrips/Leaf	Whitefly/Leaf
1	M001	0.54 C	0.21 C	3.64 A	3.50 A	2.78 ABC
2	M002	0.60 B	0.15 C	3.32 AB	3.05 B	2.33 C
3	M003	0.60 BC	0.51 A	2.83 BC	3.68 A	3.17 A
4	NM-9	0.57 BC	0.19 C	2.53 C	3.06 B	2.65 BC
5	NM-11	0.67 A	0.36 B	3.14 AB	3.48 A	3.01 AB
	LSD @5%	0.05	0.07	0.58	0.41	0.49
67	TITLE:	COMPARATIVE EFFICACY OF RODENTICIDES BAIT, FUMIGANT AND REPELLENT DEVICE FOR THE CONTROL OF RODENTS IN SUGARCANE				
	OBJECTIVES:	To evaluate the efficacy of rodenticides to find out comparatively effective technique for rodent control in sugarcane crop				
	RESEARCH WORKERS					
	DURATION:	2014-2015				
	LOCATION:	Faisalabad (33 J.B.)				

	TREATMENTS/ METHODOLOGY:	<p>Bait Preparation: Bait of the rodenticides will be prepared by adding 25 gram of rodenticides in 25ml edible oil with 950 gram of wheat porridge.</p> <p>Treatment Application: Ten gram of poison bait will be placed at the either side of burrow. Aluminium phosphide tablets will be placed inside the burrow.</p> <p>Data Recording: All the prevailing rat burrows in the crop field will be closed by plugging with soil before treatment. On the next day the number of alive burrows will be counted to ensure the presence of rat. Baits and tablets will be placed near and in the burrows respectively, then burrows will be closed. Post treatment data will be recorded by counting the number of live burrows after two weeks of each application. Alive burrows will be closed and baits will be replenished after each observation. Treatments will be evaluated by counting active/ fresh burrows after each treatment. 3-5 application of baits/ fumigants/ anti-coagulant will be made at interval of two weeks. Rodent's percentage infestation in sugarcane crop will be recorded before harvest. Yield data will also be recorded. Data so obtained will be subjected to statistical analysis.</p>
	PREVIOUS YEAR'S RESULTS:	

COMPARATIVE EFFICACY OF RODENTICIDES BAIT, FUMIGANT AND REPELLENT DEVICE FOR THE CONTROL OF RODENTS IN SUGARCANE

	Treatments	Bait material	No. of burrows before Treatment	% Reduction in no. of burrows over control (No of burrows after treatment)	% infestation reduction over control (% infestation)	Yield Mounds/acre
	Hit Rat 80% WP (Zinc Phosphide)	Crushed Wheat	29.33	87.54 B (8.00)	84.21 A (3.14)	943.14 A
	Ractophos 80% WP (Zinc Phosphide)	Crushed Wheat	40.33	82.20 C (16.00)	81.94 A (3.59)	925.65 A
	Hit Rat 80% WP (Zinc Phosphide)	Sweets	32.33	83.56 C (12.00)	65.91 B (6.78)	907.50 A
	Ractophos 80% WP (Zinc Phosphide)	Sweets	37.00	83.35 C (13.67)	67.45 B (6.47)	871.20 AB
	Agtoxin 65% (AP) tablets	---	20.67	96.25 A (1.67)	79.66 A (4.04)	861.93 AB
	Repellent Device	---	43.67	58.73 D (40.33)	40.23 C (11.87)	853.05 AB
	Control	---	33.66	0.00 E (75.67)	0.00 D (19.86)	780.45 B
	LSD @ 5%			4.77	8.35	98.25

68	TITLE:	CROSS INOCULATION OF LAC STRAINS ON DIFFERENT LAC HOST
----	---------------	--

		PLANTS.
	OBJECTIVE	To evaluate the efficiency of lac strains on already known and new host plant.
	RESEARCH WORKERS	Zia ullah
	DURATION	2014-15
	LOCATION	Entomological Lac research sub station, Pasrur.
	TREATMENTS/ METHODOLOGY	Cross inoculation of different lac strains I.e., grafted and ungrafted ber will be tested on grafted ber, ungrafted ber, dhak, fig host plants. Observation will be recorded at a week interval from 2.5 cm marked area of a branch to count the developing on these branches. The effect of biotic and abiotic factors will also be recorded. Data will be analyzed statistically.

PREVIOUS YEAR RESULTS

HOST	STRAIN	CELLS/2.5 cm	AVERAGE
Grafted Ber	Ungrafted ber	52.15	17.38
Ungrafted ber	Ungrafted ber	38.66	12.88
Dhak	Ungrafted ber	91.49	30.49