



DIRECTORATE GENERAL
PEST WARNING AND QUALITY CONTROL OF PESTICIDES, PUNJAB,
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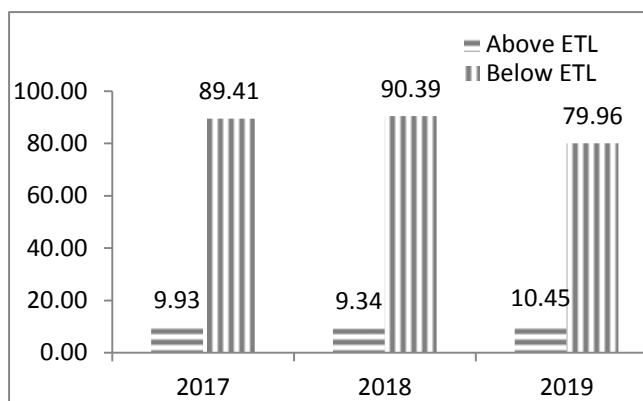
Pest Alert for 4th Week of July 2019

- In overall cotton zone the favorable climatic conditions and crop stage are conducive for flare up of various insect pests as also observed from the pest situation reports.
- Among sucking insect pests the hot spots of white fly, Jassid and Mealy bug have increased during 3rd week of July which is expected to further intensify during the next week.
- In case of bollworms the infestation of Pink bollworm has increased With a slight decrease in hot spots of Armyworm. The population of these bollworms is expected to increase during the next week.
- All the field formations, extension workers and stakeholders are informed to remain vigilant during pest scouting and also guide the farmers for timely management of these insect pests to save the cotton crop from any economic loss.

DIRECTOR GENERAL

PEST SITUATION ON COTTON CROP IN PUNJAB DURING 3RD WEEK OF JULY, 2019

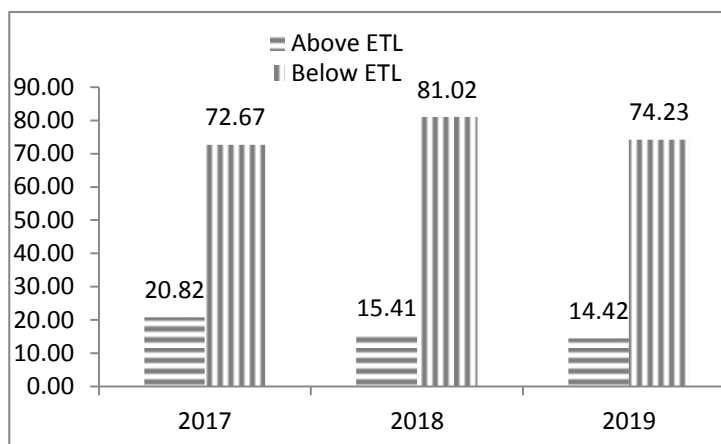
Whitefly: On overall Punjab basis 10.45% above ETL spots have been observed during current week as compared to 6.93% % in last week and 9.34% during the same corresponding period of last year. And 79.96% below ETL spots have been observed during current week as compared to 81.31% in last week and 90.39% during the same corresponding period of last year.



Tehsil wise percentage of hot spots of whitefly

S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	HASILPUR	40.4	30	HAROON ABAD	10.0
2	SILLANWALI/ SAHIWAL	33.3	31	CHISHTIAN	10.0
3	LODHRAN	31.8	32	JAM PUR	10.0
4	OKARA	31.3	33	BHAKKAR	9.4
5	RENALA KHURD	30.8	34	MIANWALI	8.9
6	MANKERA	30.8	35	KALLOR KOT	8.0
7	BAHAWAL PUR	30.5	36	KHAN PUR	7.8
8	PAK PATTAN	30.0	37	MULTAN	7.6
9	JALAL PUR P.W	27.3	38	BURE WALA	6.7
10	DEPALPUR	21.4	39	PIPLAN	6.7
11	CHICHA WATNI	19.0	40	MAILSI	6.1
12	A.P.EAST	18.8	41	TANDLIANWALA	5.9
13	SHUJABAD	15.6	42	D.G.KHAN	5.4
14	SAHIWAL	15.0	43	MINCHAN ABAD	5.0
15	YAZMAN	14.3	44	T.T.SINGH	4.8
16	CHOBARA	14.0	45	KHANEWAL	4.8
17	MIAN CHANNU	14.0	46	GOJRA	4.4
18	PEER MEHAL	12.9	47	JATOI	4.2
19	VEHARI	12.5	48	ALI PUR	3.7
20	ARIF WALA	12.0	49	ISA KHEL	3.3
21	LIAQUAT PUR	12.0	50	SHORKOT	3.1
22	SADIQ ABAD	12.0	51	A.P.SIAL	2.9
23	LAYYAH	12.0	52	KOT ADDU	2.5
24	KAROR L.E.	12.0	53	JHANG	2.3
25	KEHROR PACCA	11.8	54	JAHANIAN	2.2
26	DUYAPUR	11.5	55	MUZUFAR GARH	2.2
27	KABIR WALA	11.4	56	ROJHAN	2.1
28	R.Y.KHAN	10.9	57	FORT ABBAS	2.0
29	BAHAWAL NAGAR	10.0	58	RAJAN PUR	1.8

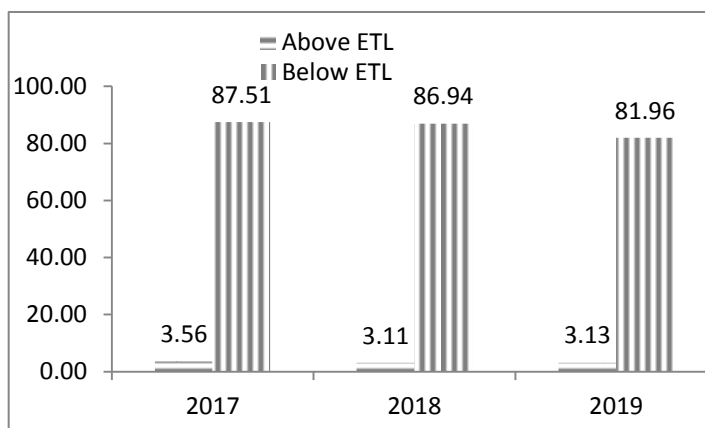
Jassid: On overall Punjab basis 14.42% above ETL spots has been observed as compared to 11.81% in last week and same week of last year 15.41%. And 74.23% below ETL spots have been observed during current week as compared to 75.14% in last week and 81.02% during the same corresponding period of last year.



Tehsil wise percentage of hot spots of jassid

S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	A.P.EAST	54.2	32	KALLOR KOT	12.0
2	HASILPUR	44.7	33	KEHROR PACCA	11.8
3	MANKERA	38.5	34	SAHIWAL	11.7
4	SHUJABAD	37.8	35	T.T.SINGH	11.3
5	BHAKKAR	37.5	36	JAHANIAN	11.1
6	SILLANWALI/ SAHIWAL	33.3	37	MIANWALI	11.11
7	BAHAWAL PUR	28.8	38	YAZMAN	10.7
8	JALAL PUR P.W	27.3	39	VEHARI	10.0
9	OKARA	25.0	40	FORT ABBAS	10.0
10	KOT ADDU	25.0	41	CHISHTIAN	10.0
11	PAK PATTAN	23.3	42	LAYYAH	10.0
12	RENALA KHURD	23.1	43	CHOBARA	10.0
13	LODHRAN	22.7	44	ALI PUR	9.3
14	MULTAN	21.2	45	D.G.KHAN	8.1
15	CHICHA WATNI	20.7	46	HAROON ABAD	8.0
16	MAILSI	18.4	47	KAROR L.E.	8.0
17	SADIQ ABAD	18.0	48	MINCHAN ABAD	7.5
18	R.Y.KHAN	17.4	49	18-HAZARI	7.5
19	LIAQUAT PUR	16.0	50	KHANEWAL	7.1
20	KABIR WALA	15.9	51	MIAN CHANNU	7.0
21	DUYAPUR	15.4	52	SHORKOT	6.3
22	JAM PUR	15.0	53	TAUNSA	6.0
23	JATOI	14.6	54	JHANG	4.7
24	ROJHAN	14.6	55	PIPLAN	4.4
25	DEPALPUR	14.3	56	TANDLIANWALA	4.4
26	KHAN PUR	13.7	57	ARIF WALA	4.0
27	MUZUFAR GARH	13.0	58	ISA KHEL	3.3
28	PEER MEHAL	12.9	59	A.P.SIAL	2.9
29	KOT CHUTTA	12.5	60	BURE WALA	2.2
30	RAJAN PUR	12.3	61	GOJRA	2.2
31	BAHAWAL NAGAR	12.0			

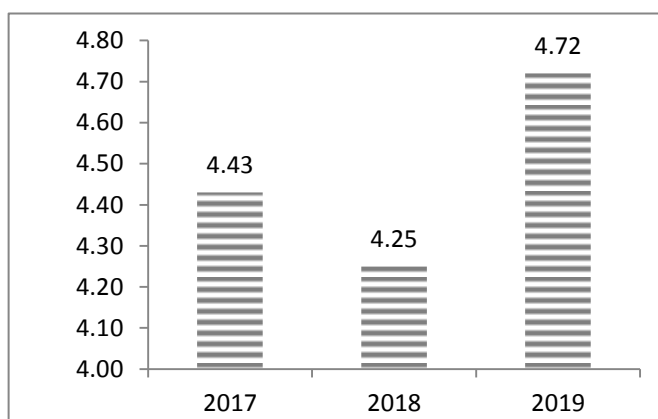
Thrips: On overall Punjab basis 3.13% above ETL spots have been observed as compared to 2.20% in last week and same week of last year i.e. 3.11%. And 81.96% below ETL spots have been observed during current week as compared to 78.94% in last week and 86.94% during the same corresponding period of last year.



Tehsil wise percentage of hot spots of thrips

S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	HASILPUR	12.8	20	DEPALPUR	3.6
2	DUYAPUR	11.5	21	PAK PATTAN	3.3
3	CHICHA WATNI	10.3	22	PEER MEHAL	3.2
4	KEHROR PACCA	9.8	23	A.P.SIAL	2.9
5	JALAL PUR P.W	9.1	24	D.G.KHAN	2.7
6	BAHAWAL NAGAR	8.0	25	MINCHAN ABAD	2.5
7	HAROON ABAD	8.0	26	KOT CHUTTA	2.5
8	CHISHTIAN	8.0	27	18-HAZARI	2.5
9	RENALA KHURD	7.7	28	JHANG	2.3
10	MIAN CHANNU	7.0	29	JAHANIAN	2.2
11	KABIR WALA	6.8	30	MUZUFAR GARH	2.2
12	BAHAWAL PUR	6.8	31	A.P.EAST	2.1
13	ISA KHEL	6.7	32	MAILSI	2.0
14	MULTAN	6.1	33	SADIQ ABAD	2.0
15	JAM PUR	5.0	34	KAROR L.E.	2.0
16	LODHRAN	4.5	35	YAZMAN	1.8
17	SHUJABAD	4.4	36	RAJAN PUR	1.8
18	BURE WALA	4.4	37	SAHIWAL	1.7
19	LIAQUAT PUR	4.0	38	T.T.SINGH	1.6

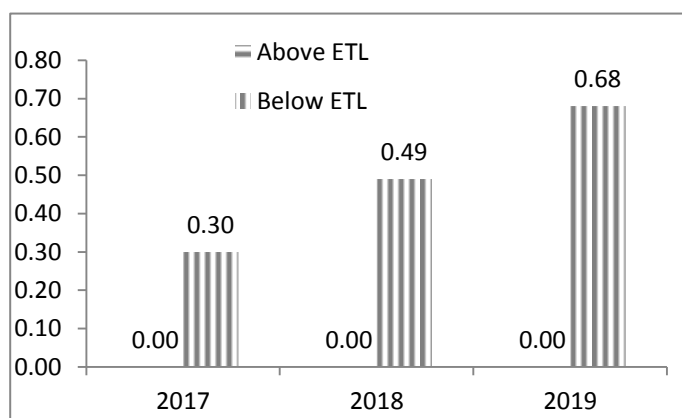
Mealy Bug: On overall Punjab basis 4.72% spots (all considered above ETL) of Mealy Bug have been observed as compared to 1.84% in last week and 4.25% spots during the same corresponding period of the last year.



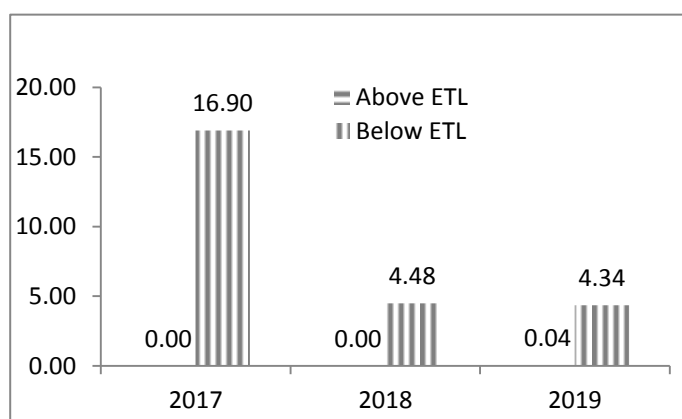
Tehsil wise percentage of hot spots of Mealy bug

S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	HASILPUR	42.6	18	JALAL PUR P.W	4.5
2	RAJAN PUR	29.8	19	KABIR WALA	4.5
3	R.Y.KHAN	19.6	20	JAHANIAN	4.4
4	KHAN PUR	13.7	21	BURE WALA	4.4
5	YAZMAN	12.5	22	A.P.EAST	4.2
6	MUZUFAR GARH	8.7	23	ARIF WALA	4.0
7	CHICHA WATNI	8.6	24	LIAQUAT PUR	4.0
8	BAHAWAL PUR	8.5	25	DUYAPUR	3.8
9	ROJHAN	8.3	26	SAHIWAL	3.3
10	KOT ADDU	7.5	27	MULTAN	3.0
11	SHUJABAD	6.7	28	MINCHAN ABAD	2.5
12	PEER MEHAL	6.5	29	MIAN CHANNU	2.3
13	JATOI	6.3	30	FORT ABBAS	2.0
14	MAILSI	6.1	31	CHISHTIAN	2.0
15	BAHAWAL NAGAR	6.0	32	KAROR L.E.	2.0
16	ALI PUR	5.6	33	KEHROR PACCA	2.0
17	KHANEWAL	4.8	34	T.T.SINGH	1.6

Mites: On overall Punjab basis 0.00% above ETL spots have been observed during current week as compared to 0.08% in last week and 0.00% during the same corresponding period of last year. And 0.68% below ETL spots have been observed during current week as compared to 5.64% in last week and 0.49% during the same corresponding period of last year.



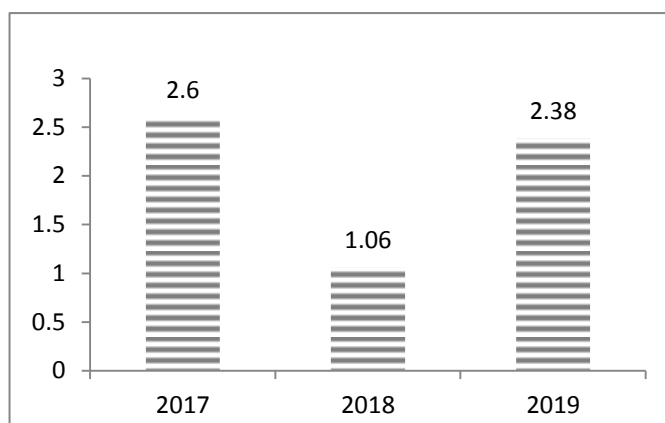
Dusky Cotton Bug: On overall Punjab basis 0.04% above ETL spots have been observed during current week as compared to 0.00% in last week and 0.00% during the same corresponding period of last year. And 4.34% below ETL spots have been observed during current week as compared to 4.80% in



last week and 4.48% during the same corresponding period of last year.

S. NO.	TEHSIL	%AGE
1	YAZMAN	1.8

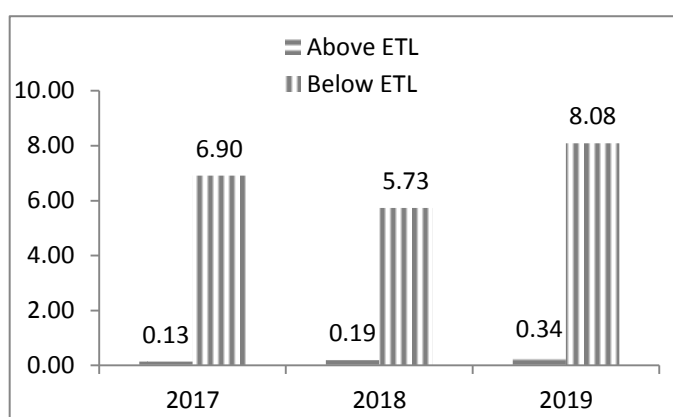
Armyworm: On overall Punjab basis 2.38% spots (all considered above ETL) of Armyworm have been observed as compared to 3.00% in last week and 1.06% spots during the same corresponding period of the last year.



Tehsil wise percentage of hot spots of army worm

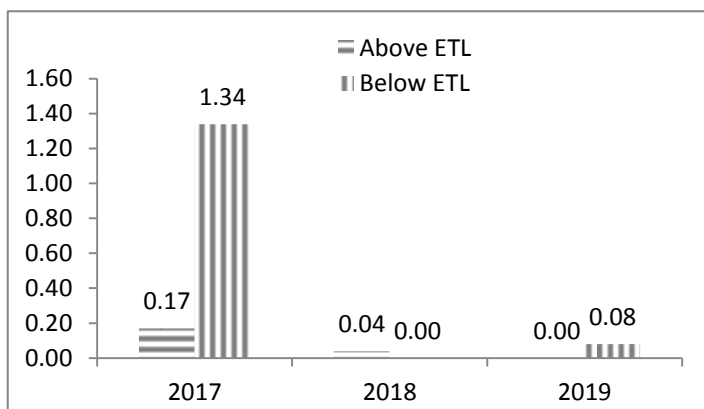
S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	OKARA	18.8	15	SADIQ ABAD	4.0
2	RENALA KHURD	15.4	16	KHAN PUR	3.9
3	DEPALPUR	14.3	17	CHICHA WATNI	3.4
4	A.P.EAST	12.5	18	MULTAN	3.0
5	KABIR WALA	9.1	19	A.P.SIAL	2.9
6	SHUJABAD	8.9	20	KHANEWAL	2.4
7	BAHAWAL PUR	8.5	21	JHANG	2.3
8	DUYAPUR	7.7	22	LODHRAN	2.3
9	JAHANIAN	6.7	23	JATOI	2.1
10	PAK PATTAN	6.7	24	FORT ABBAS	2.0
11	R.Y.KHAN	6.5	25	KAROR L.E.	2.0
12	KOT ADDU	5.0	26	RAJAN PUR	1.8
13	MIAN CHANNU	4.7	27	T.T.SINGH	1.6
14	LIAQUAT PUR	4.0			

Pink Boll Worm: On overall Punjab basis 0.34% above ETL spots have been observed as compared to 0.44% in last week and 0.19% same corresponding period of the last year. And 8.08% below ETL spots have been observed as compared to 7.17% in last week and 5.73% during same corresponding period of last year.

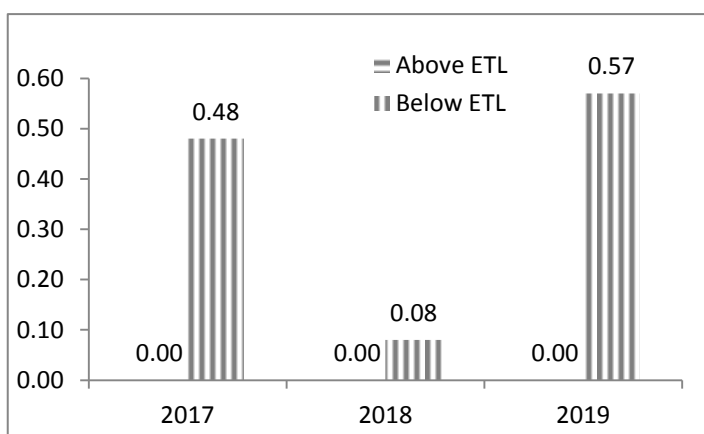


S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	HASILPUR	4.3	5	SHUJABAD	2.2
2	MAILSI	4.1	6	DUYAPUR	1.9
3	KABIR WALA	2.3	7	BAHAWAL PUR	1.7
4	LODHRAN	2.3			

American Bollworm: On overall Punjab basis 0.00% above ETL spots have been observed as compared to 0.04% in last week and 0.04% during same corresponding period of last year. And 0.08% below ETL spots have been observed as compared to 0.28% in last week and 0.00% during same corresponding period of last year.



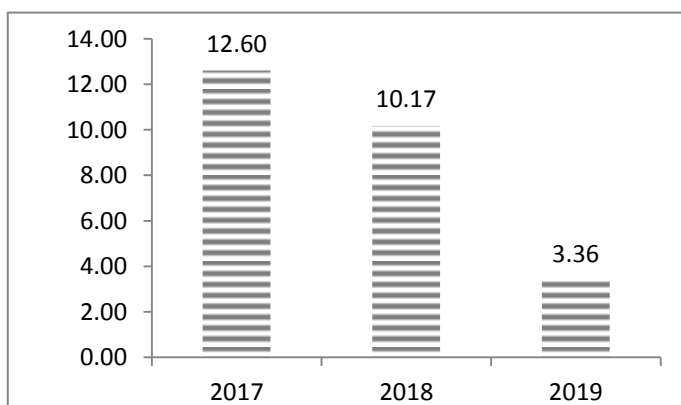
Spotted Bollworm: On overall Punjab basis 0.00% above ETL spots have been observed as compared to 0.00% in last week and 0.00% during same corresponding period of last year & 0.57% below ETL spots have been observed as compared to 0.56% in last week and 0.08% during same corresponding period of last year.



Tehsil wise percentage of hot spots of spotted boll worm

No hot spot found yet.

CLCuV: On overall Punjab basis 3.36% spots (all considered above ETL) of CLCV have been observed as compared to 1.76% in last week and 10.17% during the same corresponding period of the last year.



Tehsil wise percentage of hot spots of cotton leaf curl virus

S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	MULTAN	24.2	13	KHAN PUR	5.9
2	JALAL PUR P.W	22.7	14	MIAN CHANNU	4.7
3	KABIR WALA	20.5	15	LODHRAN	4.5
4	KOT ADDU	17.5	16	BURE WALA	4.4
5	SHUJABAD	15.6	17	LIAQUAT PUR	4.0
6	JAHANIAN	15.6	18	BAHAWAL PUR	3.4
7	VEHARI	10.0	19	BHAKKAR	3.1
8	R.Y.KHAN	8.7	20	JAM PUR	2.5
9	KHANEWAL	7.1	21	KEHROR PACCA	2.0
10	MUZUFAR GARH	6.5	22	ALI PUR	1.9
11	JATOI	6.3	23	RAJAN PUR	1.8
12	MAILSI	6.1			

FORECAST FOR THE NEXT WEEK

Meteorological data of the current week 2019-2018

Districts	2019				2018			
	Temperature		R.H%	Rainfall (mm)	Temperature °C		RH%	Rainfall (mm)
	Max.	Min.			Max.	Min.		
Multan	38.00	30.14	71.93	0.00	37.80	30.10	69.10	5.00
Khanewal	37.63	29.13	67.38	3.50	40.00	31.10	45.30	0.00
Vehari	38.13	29.38	70.56	15.00	37.00	30.00	47.70	40.00
Lodhran	39.57	30.29	60.57	0.00	39.40	27.40	35.80	0.00
Sahiwal	41.20	26.89	67.31	20.00	38.56	28.21	67.06	2.00
Pakpattan	41.13	32.38	31.75	6.00	41.88	33.00	29.25	0.00
Okara	40.00	28.00	60.00	5.00	37.90	28.50	80.00	0.00
Bahawalpur	38.99	29.41	58.14	0.00	39.64	29.21	51.00	41.60
Bahawalnagar	39.14	27.64	61.50	1.14	40.64	27.86	60.29	0.50
R.Y.Khan	40.56	28.33	72.89	8.40	40.75	30.12	73.75	0.00
D.G. Khan	40.00	29.86	59.36	9.00	41.14	29.86	54.14	10.00
M. Garh	38.00	27.23	53.42	0.00	35.93	28.71	50.61	3.00
Rajanpur	40.36	29.78	62.90	10.00	39.40	27.90	64.80	8.00
Layyah	36.50	26.60	44.00	34.00	44.50	33.00	41.30	0.00
TOT/AVG	39.23	28.93	60.12	112.04	39.61	29.64	55.01	110.10

Weather forecast for next 7 day in cotton zone

Division	Dated	22/7	23/7	24/7	25/7	26/7	27/7	28/7
Multan	Max.Temp.	39	42	42	38	36	37	35
	Min.Temp.	31	32	34	29	28	28	27
	Humidity %	37	31	33	46	48	48	32
Sahiwal	Max.Temp.	37	40	38	37	34	34	34
	Min.Temp.	29	29	32	31	28	27	27
	Humidity %	47	37	40	48	58	56	34
Bahawalpur	Max.Temp.	40	41	42	37	36	36	35
	Min.Temp.	32	32	33	27	27	29	27
	Humidity %	36	34	34	48	49	48	34
D.G. Khan	Max.Temp.	41	43	45	39	38	37	36
	Min.Temp.	30	33	34	28	28	30	30
	Humidity %	33	28	25	43	47	48	30
Average	Max.Temp.	38.18						
Cotton	Min.Temp.	29.71						
Region	Humidity %	40.43						

Source: timeanddate.com

Summary of weather forecast

Overall weather for seven days in cotton zone during next week will remain less hot than previous week, cloudy and little chances of precipitation with an average 3-4°C decrease in temperature.

Forecast of Sucking Pests:

Whitefly This pest flourishes best in hot dry climate with optimum temperature 35-42 °C with relative humidity below 50%. Maximum lethal temperature for this pest is 45-51 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Keeping in view the temperature for current week and weather forecast of next week, it is predicted that population of this pest will increase during the coming week as the temperature remain favorable for the development of this pest.

Jassid: This pest flourishes best in hot and humid climate with optimum temperature 35-40 °C with relative humidity above 70%. Maximum lethal temperature for this pest is 45-51 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week as the temperature will remain conducive for its rapid growth. The reason for more attack in the same week of last year is due to the timely sowing of crop.

Thrips: This pest flourishes best in hot dry climate with optimum temperature 35-40 °C with relative humidity below 60%. Maximum lethal temperature for this pest is 45-51 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week.

Mealy Bug: This pest flourishes best in moderate climate with optimum temperature 35-40 °C with relative humidity above 60-80%. Maximum lethal temperature for this pest is 45-51 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Keeping in view above all, it is predicted that population of this pest will increase on cotton crop during the coming week.

Mites: This pest flourishes best in dry climate with optimum temperature 28-40 °C with relative humidity above 40-50%. Maximum lethal temperature for this pest is 45 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Keeping in view above all, it is predicted that population of this pest will decrease during the coming week pertaining to hot and humid weather and rains.

Dusky Cotton Bug: This pest flourishes best in moderate climate with optimum temperature 28-40 °C with relative humidity above 50-80%. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Keeping in view above all, it is predicted that population of this pest will decrease during the coming week.

Pink Bollworm: Although PBW moths catches have been observed in pheromone installed traps in various cotton districts as given in the Table 13, Pest situation reveals that its population on (above ETL) has decreased as compared to last week but increased when compared with same week of last year on cotton crop. This pest flourishes best at moderate climate with optimum temperature 32-40 °C with relative

humidity above 60-80%. Maximum lethal temperature for this pest is 45-53 °C.

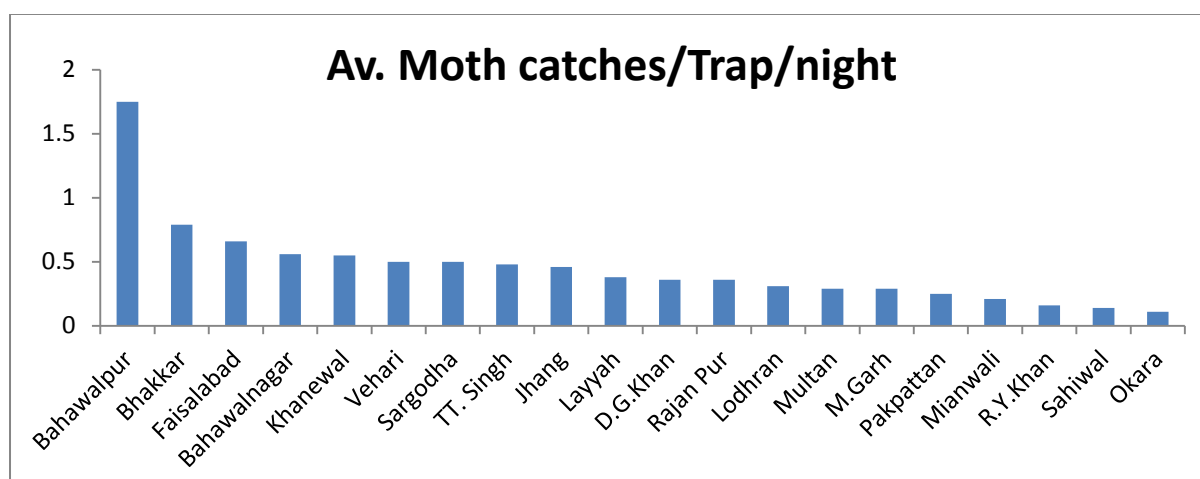
The current weather conditions on overall Punjab basis (temp. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. It is predicted that population of this pest will increase on cotton during the coming week as expected temperature range is favorable for the development of this pest. Moreover its increase in population than last year is due to:

- a. There was ban by imposing section 144 on early cotton last year. This practice was not exercised this year so as to promote grow more cotton campaign.
- b. The early sown cotton provide host for the suicidal generation of PBW moths and also become nursery of this pest and potential danger for the seasonal cotton.

Moth Catches in Pheromone Traps during 3rd Week of July, 2019

Moth Catches in Pheromone Traps During 3 rd Week of July, 2019			
District	Traps Installed	Av. Moth catches/Trap/night	Av. No. of Moths other than PBW/ Trap/Night
Multan	6	0.29	0.0
Khanewal	8	0.55	0.00
Vehari	6	0.50	0.00
Lodhran	6	0.31	0.10
Sahiwal	4	0.14	0.00
Pakpattan	4	0.25	0.00
Okara	4	0.11	0.00
Bahawalpur	8	1.75	0.04
Bahawalnagar	10	0.56	0.17
R.Y.Khan	8	0.16	0.09
D.G.Khan	4	0.36	0.00
M.Garh	8	0.29	0.00
Rajan Pur	6	0.36	0.00
Layyah	6	0.38	0.00
Sargodha	2	0.50	0.00
Mianwali	4	0.21	0.00
Bhakkar	8	0.79	0.00
Faisalabad	5	0.66	0.00
TT. Singh	6	0.48	0.00
Jhang	4	0.46	0.00

Note. 3 moth catches on 3 consecutive nights in a trap is considered as ETL



American Bollworm: This pest flourishes best at dry & moderate climate with optimum temperature 32-40 °C with relative humidity above 50-70%. Maximum lethal temperature for this pest is 45-53 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Due to cultivation of more BT varieties, it is predicted that population of this pest will remain on low ebb on cotton crop in the coming week.

Moth catches on light traps during 3rd week of July, 2019

Moth Catches on Light Traps/Trap/week During 3 rd Week of July, 2019				
District	Traps Installed	A.B.W	S.B.W	Armyworm
Multan	3	0	0	7
Khanewal	4	0	0	13
Vehari	3	2	0	5
Lodhran	3	3	2	5
Sahiwal	2	2	0	4
Pakpattan	2	2	0	5
Okara	3	4	0	9
Bahawalpur	4	7	2	8
Bahawalnagar	5	10	6	9
R.Y.Khan	4	4	5	6
D.G.Khan	3	0	0	0
M.Garh	4	0	0	5
Rajan Pur	3	0	0	0
Layyah	3	0	0	0
Note. 3 moth catches of a pest on 3 consecutive nights in a trap is considered as ETL				

Spotted Bollworm: This pest flourishes best at mild & humid climate with optimum temperature 30-40 °C with relative humidity above 60-100%. Maximum lethal temperature for this pest is 45-53 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Due to cultivation of more BT varieties, it is predicted that above ETL population of this pest will remain zero on cotton crop in the coming week.

Armyworm: This pest flourishes best in mild & humid climate with optimum temperature 30-40 °C with relative humidity below 70-100%. Maximum lethal temperature for this pest is 45-53 °C. The current weather conditions on overall Punjab basis (temp. Max 39.23 °C, Min. 28.93°C with R. humidity 60.12%) & forecast for the next week temp. Max. 38.18°C, Min. 29.71°C with humidity 40.43%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week.

CLCuV: CLCUV spots increased from last week and decreased from same week of last year on cotton crop. The incidence of this disease is expected to increase on cotton crop in next week due to increase in its potential vector i.e. whitefly.

RECOMMENDATIONS

WHITEFLY MANAGEMENT

1. Conduct regular pest scouting of Whitefly.
2. Control the pest without delay when population reaches ETL i.e. nymphs or adults or both 5 per leaf.
3. Control weeds in and outside the field especially near water channels and fallow lands.

Alternate host plants of whitefly

Crops	Vegetables	Orchards	Weeds/ Ornamentals	Trees
Sunflower	Okra	Citrus	Gardenia	Shisham
Tobacco	Brinjal	Litchi	Mako	Shareen
Melon	Cucurbits	Pomegranate	Maina	
	Tomato	Ber (<i>Zizyphus</i>)	Karund	
	Cabbage	Guava	Lehli	
	Cauliflower	Mulbery	Gurhal	
	Peas	Papaya	Chambelli	
	Potato		Leh	
	Onion		Hazardani	
	Spinach		Rattan Jot	
	Chillies		Sun Kukra	
	Cucumber			

JASSID MANAGEMENT

1. Eradicate weeds.
2. Conduct Pest Scouting at least twice a week.
3. Use *Chrysoperla* Cards @ 80-90 cards per acre having 20-25 eggs on each card which are available at AARI Faisalabad, Sahiwal, Okara and Vehari. (Repeat this process after every two weeks).

THRIPS MANAGEMENT

1. Conduct Pest Scouting regularly at least twice a week.
2. Avoid intercropping of cotton crop with vegetables.
3. Control weeds in and outside the field.

MEALY BUG MANAGEMENT

1. Visit the fields daily to detect the infestation for effective management of mealy bug well in time.
2. Keep field and water courses etc. free from weeds especially Itsit & Hazaardani.
3. To avoid its shifting from one place to another, keep the horticultural nurseries free from its infestation. Spray such infested nurseries before shifting the plants.
4. Uproot and keep the infested plants gently in plastic bags and bury in the soil outside the field.
5. Avoid water stress to the plants.
6. Avoid repeated visits of workers from infested fields to healthy fields.

Alternate host plants of cotton mealy bug

Crops	Vegetables	Ornamentals	Weeds	Orchards
Sunflower	Okra	China Rose	Hazar Dani	Citrus
Tobacco	Brinjal	Huddle	Amarantus	Mulbery
Jantar	Tomato	Cotton Rose	Bhakra	Ficus
Sesame	Chillies	Gulchain	Mako	Ber
	Pumpkin	Lantana	Sueda	
		Din Ka Raja	Itsit	
		Rat Ki Rani	Karund	
		Anthorium	Aksen	
		Gul-e-Daudi	Bathu	
		Gainda	Puth Kanda	
			Kanghi	

MANAGEMENT OF DUSKY COTTON BUG

1. Eradicate weeds.
2. Conduct Pest Scouting at least twice a week.
3. Remove alternate host plants

MANAGEMENT OF ARMY WORM

1. Keep the fields clean from weeds especially Its it which is a preferred host of armyworm.
2. Avoid sowing of Jantar near cotton fields.
3. Regular pest scouting at least twice a week.
4. Hand picking and destruction of egg masses at initial stage as initially its attack starts in patches and is clearly visible.

CLCuV MANAGEMENT

1. Keep Cotton fields free from all kinds of weeds.
2. Eradicate other alternate host plants of CLCuV and dispose them off carefully.
3. Thinning out and destruction of Virus affected plants.
4. Remove CLCuV effected plants in less than 60 DAS (Days after sowing) crop.
5. Hoeing after each irrigation or rain at wattar condition till canopies permit.
6. Apply post emergence Glyphosate for both broad and narrow leaved weeds and Glyphosate for grassy weeds with shield and use Flat Fan Nozzle, if needed.
7. Irrigate the fields when needed keeping in view weather conditions e.g. temperature, rainfall, soil water holding capacity and plant need.
8. Balanced use of Fertilizer i.e. N.P.K.

9. Keep transmission vector (whitefly) at the low ebb

Alternate host plants of CLCuV

Crops	Vegetables	Ornamentals	Weeds
Sunflower	Okra	Gurhal	Leh
Melon	Brinjal	Chambeli	Lehli
Tobacco	Chillies		Mako
	Tomato		Maina
	Potato		Karund/Bathu
	Cucumber		Gardenia
			Hazardani
			Rattanjot
			Sun Kukra

Economic threshold levels of cotton pests

Insect pests	Economic threshold levels
Jassid	1 Adult or Nymph per leaf
Whitefly	5 Adults and Nymphs per Leaf
Thrips	8-10 Adults and Nymphs per Leaf
Mealy bug	On appearance
Mites	On damage appearance
Spotted Boll worm	3 Larvae/ 25 plants.
Pink Boll worm	5 Larvae /100 bolls.
American boll worm	5 brown eggs or 3 small larvae or 5 both per 25 plants on non Bt varieties. 2 larvae of 2 nd instar per 25 plants on Bt varieties.
Army worm	On appearance
Aphid	Spray on visible damage on top terminals.
Dusky Cotton bug	10 per leaf/bud