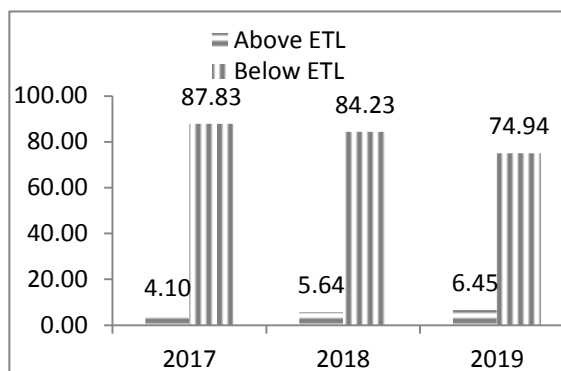


## PEST SITUATION ON COTTON CROP IN PUNJAB DURING 4<sup>TH</sup> WEEK OF OCTOBER, 2019

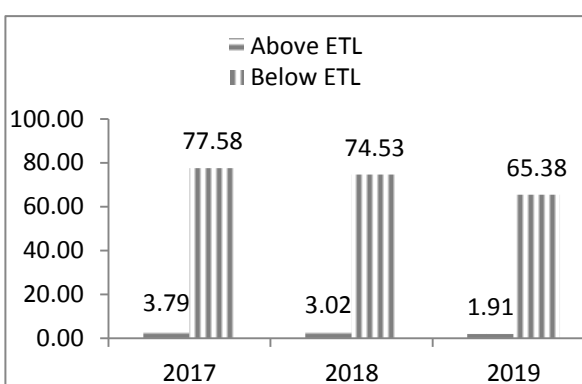
**Whitefly:** On overall Punjab basis 6.45% above ETL spots have been observed during current week as compared to 12.25% in last week and 5.64% during the same corresponding period of last year. And 74.94% below ETL spots have been observed during current week as compared 77.21% in last week and 84.23% during the same corresponding period of last year.



### Tehsil wise percentage of hot spots of whitefly

Sr#	TEHSIL	%AGE	Sr#	TEHSIL	%AGE
1	JALAL PUR P.W	25.0	17	PIPLAN	10.3
2	HASILPUR	25.0	18	KOT CHUTTA	10.0
3	SADIQ ABAD	20.0	19	MINCHAN ABAD	9.1
4	BAHAWAL PUR	19.7	20	MAILSI	8.5
5	R.Y.KHAN	18.9	21	DUYAPUR	6.3
6	YAZMAN	18.2	22	KEHROR PACCA	6.3
7	MULTAN	16.7	23	VEHARI	5.0
8	LIAQUAT PUR	16.3	24	LODHRAN	5.0
9	SHUJABAD	14.6	25	D.G.KHAN	5.0
10	KHAN PUR	13.1	26	RAJAN PUR	5.0
11	BAHAWAL NAGAR	12.5	27	JAM PUR	5.0
12	HAROON ABAD	12.5	28	MIANWALI	4.0
13	FORT ABBAS	12.5	29	KALLOR KOT	2.9
14	A.P.EAST	11.7	30	ROJHAN	2.5
15	ISA KHEL	11.5	31	BURE WALA	2.4
16	CHISHTIAN	10.4	32	TAUNSA	2.0

**Jassid:** On overall Punjab basis 1.91% above ETL spots has been observed as compared to 3.35% in last week and same week of last year 3.02%. And 65.38% below ETL spots have been observed during current week as compared to 70.47% in last week and 74.53% during the same corresponding period of last year.

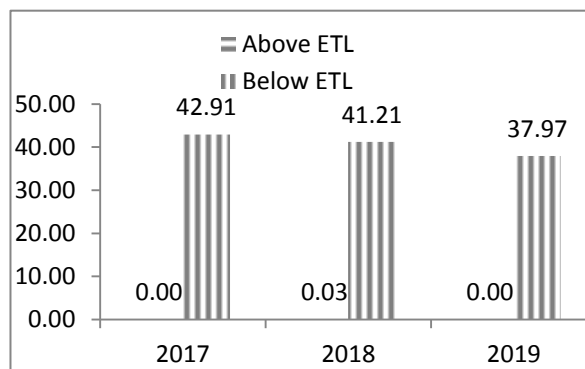


### Tehsil wise percentage of hot spots of jassid

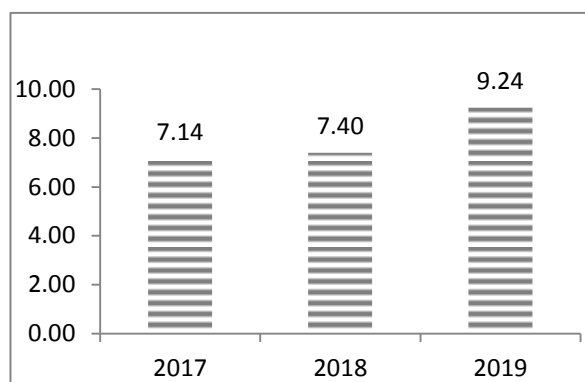
Sr#	TEHSIL	%AGE	Sr#	TEHSIL	%AGE
1	BAHAWAL NAGAR	20.0	11	ARIF WALA	6.3
2	FORT ABBAS	15.0	12	R.Y.KHAN	5.7
3	CHISHTIAN	14.6	13	SAHIWAL	5.6
4	OKARA	14.3	14	MIANWALI	4.0
5	MINCHAN ABAD	11.4	15	PIPLAN	2.6
6	RENALA KHURD	10.0	16	GOJRA	2.3

7	HAROON ABAD	10.0	17	CHICHA WATNI	1.8
8	ISA KHEL	7.7	18	YAZMAN	1.5
9	PAK PATTAN	7.1	19	TANDLIANWALA	1.3
10	SUMUNDRI	6.7			

**Thrips:** On overall Punjab basis 0.00% above ETL spots have been observed as compared to 0.00% in last week and same week of last year i.e. 0.03%. And 37.97% below ETL spots have been observed during current week as compared to 44.85% in last week and 41.21% during the same corresponding period of last year.



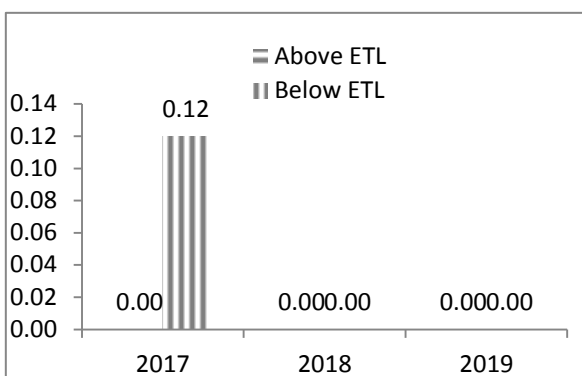
**Mealy Bug:** On overall Punjab basis 9.24% spots (all considered above ETL) of Mealy Bug have been observed as compared to 13.68% in last week and 7.40% spots during the same corresponding period of the last year.



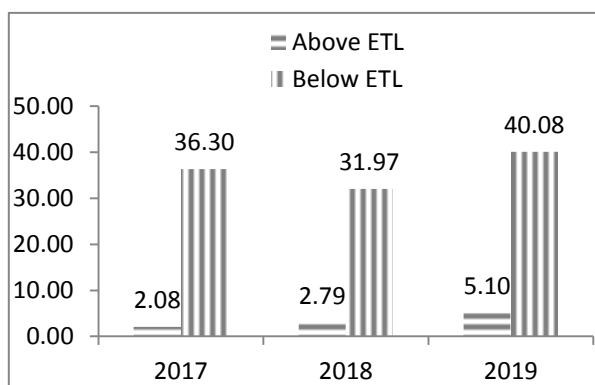
### Tehsil wise percentage of hot spots of mealy bug

Sr#	TEHSIL	%AGE	Sr#	TEHSIL	%AGE
1	HASILPUR	53.6	22	SHUJABAD	9.8
2	R.Y.KHAN	32.1	23	MIAN CHANNU	9.1
3	FORT ABBAS	27.5	24	MAILSI	8.5
4	KHAN PUR	26.2	25	A.P.EAST	8.3
5	YAZMAN	22.7	26	PIPLAN	7.7
6	LIAQUAT PUR	20.4	27	VEHARI	7.5
7	MULTAN	19.0	28	KOT CHUTTA	7.5
8	CHISHTIAN	18.8	29	PAK PATTAN	7.1
9	KEHROR PACCA	15.6	30	DUYAPUR	6.3
10	BAHAWAL NAGAR	15.0	31	ARIF WALA	6.3
11	RAJAN PUR	15.0	32	MUZUFAR GARH	6.1
12	ALI PUR	14.3	33	ROJHAN	5.0
13	BAHAWAL PUR	14.1	34	TAUNSA	4.0
14	MINCHAN ABAD	13.6	35	KAROR L.E.	3.7
15	JALAL PUR P.W	12.5	36	JHANG	3.2
16	LODHRAN	12.5	37	D.G.KHAN	2.5
17	SADIQ ABAD	12.5	38	KOT ADDU	2.2
18	BURE WALA	11.9	39	KHANEWAL	2.1
19	HAROON ABAD	10.0	40	CHOBARA	2.0
20	MANKERA	10.0	41	JAHANIAN	1.5
21	LAYYAH	9.8			

**Mites:** On overall Punjab basis 0.00% 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 0.00% below 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.



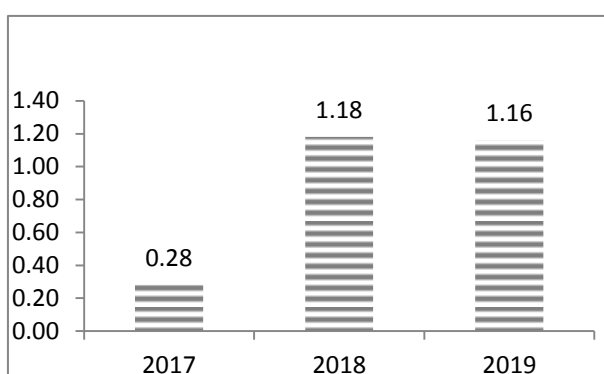
**Dusky Cotton Bug:** On overall Punjab basis 5.10% above ETL spots have been observed during current week as compared to 4.90% in last week and 2.79% during the same corresponding period of last year. And 40.08% below ETL spots have been observed during current week as compared to 40.48% in last week and 31.97% during the same corresponding period of last year.



### Tehsil wise percentage of hot spots of Dusky Cotton Bug

Sr#	TEHSIL	%AGE	Sr#	TEHSIL	%AGE
1	HASILPUR	80.4	9	BURE WALA	9.5
2	LODHRAN	25.0	10	JALAL PUR P.W	7.5
3	BAHAWAL PUR	23.9	11	VEHARI	7.5
4	DUYAPUR	21.9	12	KABIR WALA	5.0
5	MULTAN	16.7	13	SHUJABAD	4.9
6	A.P.EAST	16.7	14	YAZMAN	4.5
7	KEHROR PACCA	15.6	15	KHANEWAL	4.2
8	MAILSI	14.9	16	CHISHTIAN	2.1

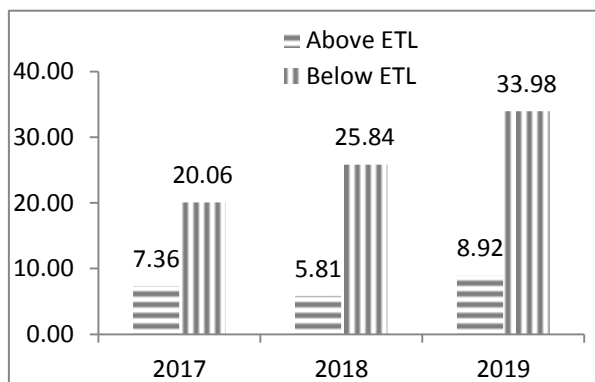
**Armyworm:** On overall Punjab basis 1.16% spots (all considered above ETL) of Armyworm have been observed as compared to 3.15% in last week and 1.18% spots during the same corresponding period of the last year.



### Tehsil wise percentage of hot spots of Army worm

Sr#	TEHSIL	%AGE	Sr#	TEHSIL	%AGE
1	R.Y.KHAN	9.4	8	SADIQ ABAD	2.5
2	KHAN PUR	8.2	9	KOT ADDU	2.2
3	LIAQUAT PUR	6.1	10	MAILSI	2.1
4	MIAN CHANNU	6.1	11	KHANEWAL	2.1
5	ALI PUR	4.1	12	KAROR L.E.	1.9
6	BAHAWAL PUR	2.8	13	CHICHA WATNI	1.8
7	PIPLAN	2.6	14	HASILPUR	1.8

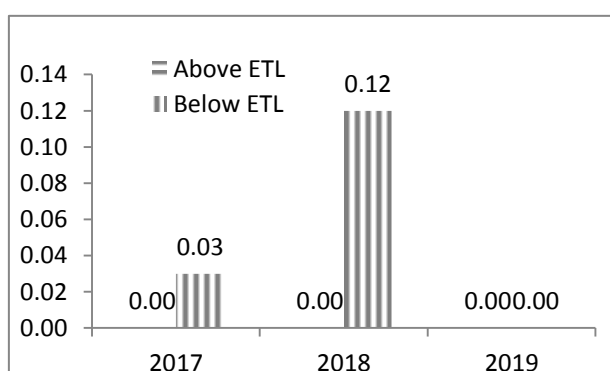
**Pink Boll Worm:** On overall Punjab basis 8.92% above ETL spots have been observed as compared to 12.09% in last week and 5.81% same corresponding period of the last year. And 33.98% below ETL spots have been observed as compared to 35.09% in last week and 25.84% during same corresponding period of last year.



### Tehsil wise percentage of hot spots of Pink Bollworm

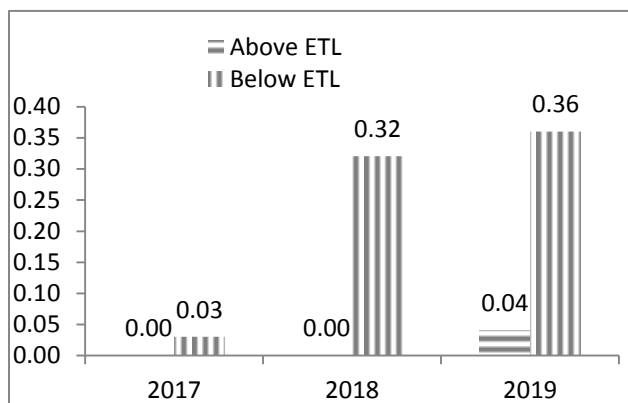
Sr#	TEHSIL	%AGE	Sr#	TEHSIL	%AGE
1	HASILPUR	41.1	23	DARYA KHAN	11.1
2	MULTAN	26.2	24	YAZMAN	10.6
3	VEHARI	25.0	25	KHANEWAL	10.4
4	SHUJABAD	24.4	26	KABIR WALA	10.0
5	SILLANWALI/ SAHIWAL	20.0	27	SADIQ ABAD	10.0
6	ARIF WALA	18.8	28	MINCHAN ABAD	9.1
7	CHISHTIAN	18.8	29	MIANWALI	8.0
8	BAHAWAL NAGAR	17.5	30	JAHANIAN	7.6
9	MAILSI	17.0	31	MIAN CHANNU	7.6
10	SAHIWAL	16.7	32	FORT ABBAS	7.5
11	CHICHA WATNI	16.1	33	CHOBARA	5.9
12	DUYAPUR	15.6	34	KALLOR KOT	5.9
13	BAHAWAL PUR	15.5	35	BHAKKAR	5.7
14	JALAL PUR P.W	15.0	36	PIPLAN	5.1
15	KHAN PUR	14.8	37	ALI PUR	4.1
16	BURE WALA	14.3	38	ISA KHEL	3.8
17	PAK PATTAN	14.3	39	A.P.EAST	3.3
18	LIAQUAT PUR	14.3	40	JHANG	3.2
19	R.Y.KHAN	13.2	41	TANDLIANWALA	2.6
20	LODHRAN	12.5	42	KOT CHUTTA	2.5
21	KEHROR PACCA	12.5	43	RAJAN PUR	2.5
22	HAROON ABAD	12.5	44	KAROR L.E.	1.9

**American 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. And 0.00% below ETL spots have been observed as compared to 0.12% in last week and 0.12% during same



corresponding period of last year.

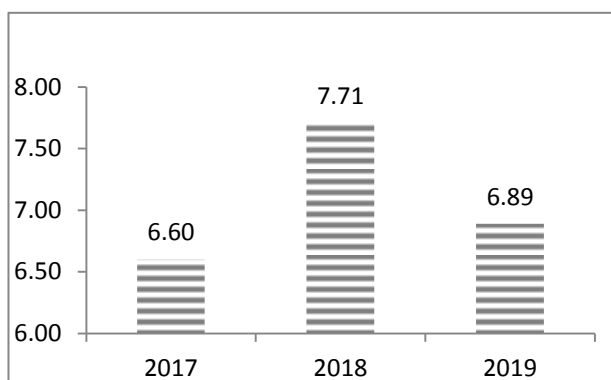
**Spotted Bollworm:** On overall Punjab basis 0.04% above ETL spots have been observed as compared to 0.00% in last week and 0.00% during same corresponding period of last year & 0.36% below ETL spots have been observed as compared to 0.65% in last week and 0.32% during same corresponding period of last year.



### Tehsil wise percentage of hot spots of spotted boll worm

Sr#	Tehsil	%AGE
1	YAZMAN	1.5

**CLCuV:** On overall Punjab basis 6.89% spots (all considered above ETL) of CLCV have been observed as compared to 9.72% in last week and 7.71% during the same corresponding period of the last year.



### Tehsil wise percentage of hot spots of cotton leaf curl virus

Sr#	TEHSIL	%AGE	Sr#	TEHSIL	%AGE
1	VEHARI	55.0	20	BAHAWAL NAGAR	10.0
2	KHANEWAL	39.6	21	SHUJABAD	7.3
3	KABIR WALA	27.5	22	PAK PATTAN	7.1
4	SADIQ ABAD	25.0	23	ARIF WALA	6.3
5	LIAQUAT PUR	24.5	24	JAHANIAN	6.1
6	BURE WALA	23.8	25	CHISHTIAN	4.2
7	MIAN CHANNU	19.7	26	CHOBARA	3.9
8	KHAN PUR	18.0	27	A.P.EAST	3.3
9	MAILSI	17.0	28	JHANG	3.2
10	R.Y.KHAN	17.0	29	YAZMAN	3.0
11	MULTAN	16.7	30	MINCHAN ABAD	2.3
12	FORT ABBAS	12.5	31	KAROR L.E.	1.9
13	HASILPUR	10.7	32	CHICHA WATNI	1.8
14	JALAL PUR P.W	10.0	33	BAHAWAL PUR	1.4

## FORECAST FOR THE NEXT WEEK

### Meteorological data of the current week 2019-2018

Districts	2019				2018			
	Temperature		R.H%	Rainfall (mm)	Temperature		RH%	Rainfall (mm)
	Max.	Min.			Max.	Min.		
Multan	29.90	18.70	77.00	0.00	30.88	14.50	77.19	0.00
Khanewal	30.38	18.25	68.00	0.00	32.80	16.86	73.19	0.00
Vehari	31.56	19.33	66.83	0.00	27.89	19.89	50.56	0.00
Lodhran	31.57	19.14	67.36	0.00	31.90	20.57	51.14	1.00
Sahiwal	32.00	20.01	65.00	0.00	33.00	19.00	61.00	0.00
Pakpattan	31.43	25.29	66.00	0.00	34.71	25.14	62.00	0.00
Okara	35.00	22.50	81.00	0.00	32.40	18.80	80.00	0.00
Bahawalpur	32.79	18.30	57.00	40.20	32.89	17.11	54.29	Traces
Bahawalnagar	34.04	18.79	56.71	0.00	30.67	15.92	48.63	0.00
R.Y.Khan	36.75	20.33	79.50	0.00	34.55	18.10	76.40	0.00
D.G.Khan	34.29	21.29	49.86	0.00	34.86	17.86	51.21	0.00
M.Garh	33.53	20.58	45.50	0.00	33.60	21.52	47.60	0.00
Rajanpur	34.58	20.88	57.30	0.00	27.04	14.86	46.70	0.00
Layyah	32.50	17.66	61.66	0.00	35.33	20.66	54.50	0.00
<b>TOT/AVG</b>	<b>32.88</b>	<b>20.08</b>	<b>64.19</b>	<b>40.20</b>	<b>32.32</b>	<b>18.63</b>	<b>59.60</b>	<b>1.00</b>

### Weather forecast for next 7 day in cotton zone

Division	Dated	29/10	30/10	31/10	1/11	2/11	3/11	4/11
Multan	Max.Temp.	34	34	33	30	30	32	32
	Min.Temp.	19	20	20	22	19	19	18
	Humidity %	24	26	28	38	41	35	20
Sahiwal	Max.Temp.	33	34	33	28	30	32	30
	Min.Temp.	17	18	19	20	17	17	19
	Humidity %	27	29	31	43	42	35	18
Bahawalpur	Max.Temp.	33	34	34	29	30	33	31
	Min.Temp.	20	21	21	21	19	18	17
	Humidity %	28	36	31	47	44	35	11
D.G. Khan	Max.Temp.	36	35	34	31	30	32	32
	Min.Temp.	20	20	20	22	20	19	19
	Humidity %	23	22	24	41	39	34	16
Average Cotton Region	Max. Temp.	<b>32.11</b>						
	Min. Temp.	<b>19.32</b>						
	Humidity %	<b>31.00</b>						

Source: [timeanddate.com](http://timeanddate.com)

### Summary of weather forecast

Overall weather for seven days in cotton zone during next week will remain moderate and temperature may slightly decrease than previous week.

**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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. Keeping in view the temperature for current week and weather forecast of next week, it is predicted that population of this pest will decrease during the coming week as the temperature is not 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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. Keeping in view above all, it is predicted that population of this pest will further decrease during the coming week.

**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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. Keeping in view above all, it is predicted that population of this pest will further decrease 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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. Keeping in view above all, it is predicted that population of this pest will further decrease 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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C,

Min. 19.32°C with humidity 31.00%. Keeping in view above all, it is predicted that population of this pest will remain as such during the coming week.

**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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week.

**Pink Bollworm:** 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 (Max temp. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. It is predicted that population of this pest will decrease 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:

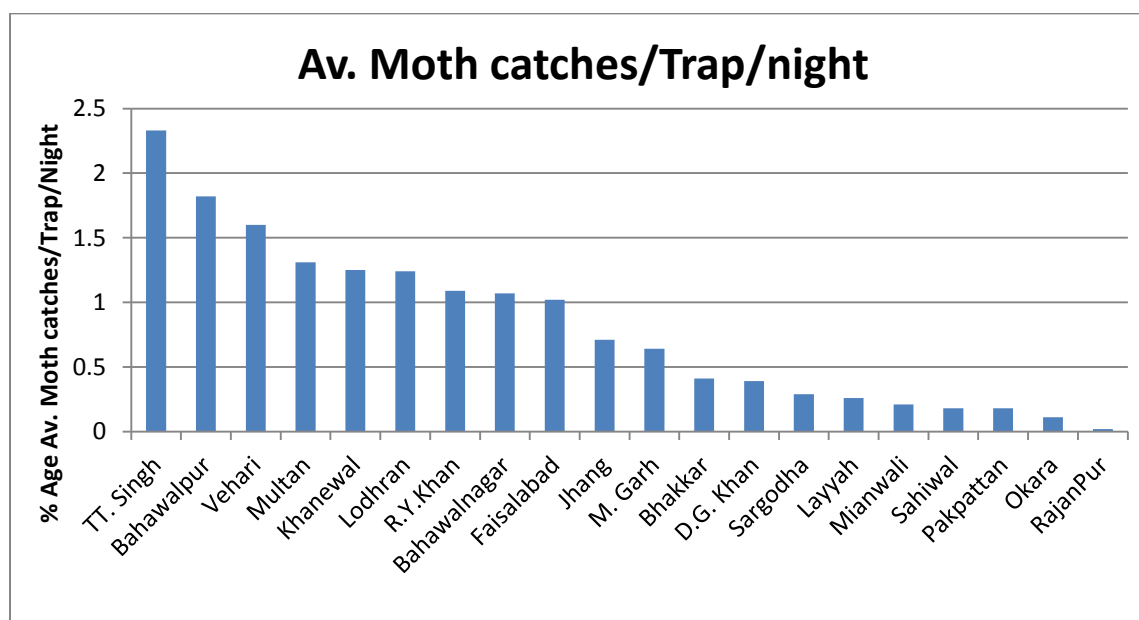
- a. There was ban by imposing section 144 on early cotton last year. This practice was not exercised this year so as to promote grow more cotton campaign.
- b. The early sown cotton provide host for the suicidal generation of PBW moths and also become nursery of this pest and potential danger for the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



### Moth Catches in Pheromone Traps during 4<sup>th</sup> Week of October, 2019

Moth Catches in Pheromone Traps During 4 <sup>th</sup> Week of October, 2019			
District	Traps Installed	Av. Moth catches/Trap/night	Av. No. of Moths other than PBW/ Trap/Night
Multan	6	1.31	0.0
Khanewal	8	1.25	0.00
Vehari	6	1.60	0.00
Lodhran	6	1.24	0.00
Sahiwal	4	0.18	0.00
Pakpattan	4	0.18	0.00
Okara	4	0.11	0.00
Bahawalpur	8	1.82	0.11
Bahawalnagar	10	1.07	0.11
R.Y.Khan	8	1.09	0.36
D.G. Khan	4	0.39	0.00
M. Garh	8	0.64	0.00
RajanPur	6	0.02	0.00
Layyah	6	0.26	0.00
Sargodha	2	0.29	0.00
Mianwali	4	0.21	0.00
Bhakkar	8	0.41	0.00
Faisalabad	5	1.02	0.00
TT. Singh	6	2.33	0.00
Jhang	4	0.71	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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%.

Due to cultivation of more BT varieties, it is predicted that population of this pest will remain such in the coming week.

### Moth catches on light traps during 4<sup>th</sup> week of October, 2019

Moth Catches on Light Traps/Trap/week During 4 <sup>th</sup> Week of October, 2019				
District	Traps Installed	A.B.W	S.B.W	Armyworm
Multan	3	0	0	8
Khanewal	4	0	0	10
Vehari	3	0	0	2
Lodhran	3	2	0	7
Sahiwal	2	0	0	4
Pakpattan	2	0	0	2
Okara	3	0	0	3
Bahawalpur	4	1	0	4
Bahawalnagar	5	1	0	8
R.Y.Khan	4	5	10	14
D.G.Khan	3	0	0	0
M.Garh	4	0	0	6
RajanPur	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. 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. Due to cultivation of more BT varieties, it is predicted that above ETL population of this pest will remain such 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 32.88°C, Min. 20.08°C with R. humidity 64.19%) & forecast for the next week temp. Max. 32.11°C, Min. 19.32°C with humidity 31.00%. Keeping in view above all, it is predicted that population of this pest will decrease during the coming week.

**CLCuV:** CLCUV spots have decreased from last week and same week of last year on cotton crop. The incidence of this disease is expected to decrease on cotton crop in next week due to decrease 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.
4. Apply among the following recommended insecticide at ETL and repeat the spray with alternate insecticides if required;
  - Spirotetramate 125 ml+ Biopower 250 ml per Acre
  - Pyriproxifen 400 ml per Acre
  - Buprofezin 600 gm per Acre
  - Flonicamid 80 gm per Acre
  - Diafenthuron 200 ml per Acre

### Alternate host plants of whitefly

Crops	Vegetables	Orchards	Weeds/ Ornamentals	Trees
Sunflower	Okra	Citrus	Gardenia	Shisham
Tobacco	Brinjal	Litchi	Mako	Shareen
	Cucurbits	Pomegranate	Maina	
	Tomato	Ber ( <i>Zizyphus</i> )	Karund	
	Cabbage	Guava	Lehli	
	Cauliflower	Mulberry		
	Peas	Papaya		
	Potato			
	Onion			
	Spinach			

### 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/card
4. Apply among the following recommended insecticide at ETL and repeat the spray with alternate insecticides if required;
  - Flonicamid 60 gm per Acre
  - Fipronil+Imidacloprid 60 gm per Acre
  - Nitenpiram 200ml per Acre

### 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.
4. Apply among the following recommended insecticide at ETL and repeat the spray with alternate insecticides if required;
  - Fipronil+Imidacloprid 60 gm per Acre
  - Chlorfenpyr 125 ml per Acre

### **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**

<b>Crops</b>	<b>Vegetables</b>	<b>Ornamentals</b>	<b>Weeds</b>	<b>Orchards</b>
Sunflower	Okra	China Rose	Hazar Dani	Citrus
Tobacco	Brinjal	Huddle	Amarantus	Mulberry
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 Pink Bollworm:**

1. Use Sex Pheromone Traps for monitoring of PBW
2. Eradicate rosette flowers.
3. Apply among the following recommended insecticide at ETL and repeat the spray with alternate insecticides if required;
  - Spintoram 120SC @ 80 ml per Acre

- Chlorantraniliprole@50ml per Acre
- Triazophos@1000ml per Acre
- Bifenthrin @250ml per Acre
- Gammacyhalothrin@100ml per Acre
- Lambdacyhalothrin@333ml per Acre

### **MANAGEMENT OF DUSKY COTTON BUG**

1. Eradicate weeds.
2. Conduct Pest Scouting at least twice a week.
3. Remove alternate host plants
4. Apply among the following recommended insecticide at ETL and repeat the spray with alternate insecticides if required;
  - Imidacloprid 250gm per Acre
  - Acetamaprid 125 gm per Acre
  - Chlorpyrifos 800-1000ml per Acre

### **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.
5. Apply among the following recommended insecticide at ETL and repeat the spray with alternate insecticides if required;
  - Leufenuron 200ml per Acre
  - Flubendamide 50ml per Acr.

### **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 or Nymphs or both per Leaf
Thrips	8-10 Adults or 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 both 5 per 25 plants on non Bt varieties. 2 larvae of 2 <sup>nd</sup> 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