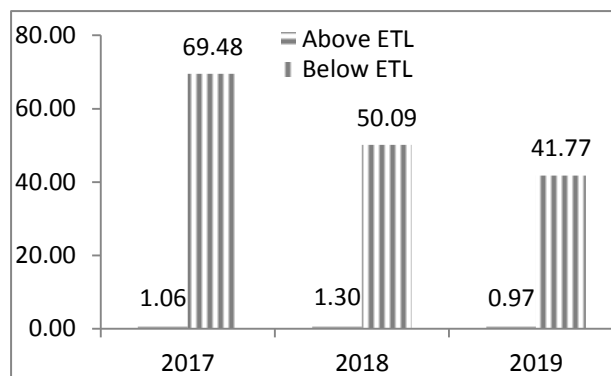
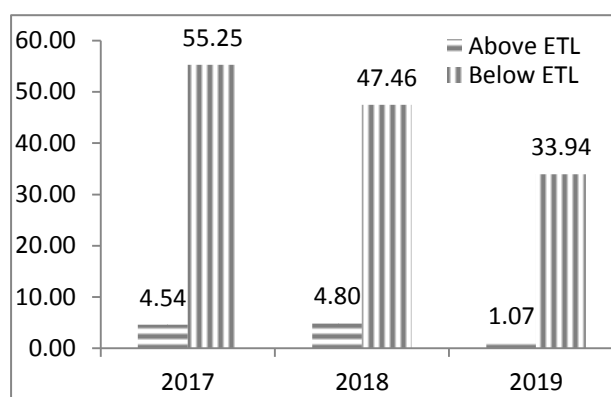


PEST SITUATION ON COTTON CROP IN PUNJAB DURING 4TH WEEK OF JUNE, 2019

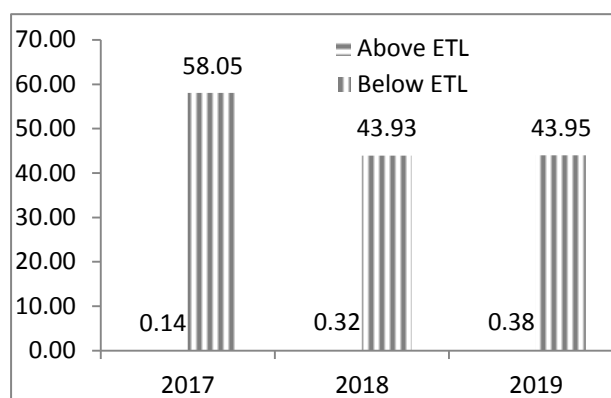
Whitefly: On overall Punjab basis 0.97% above ETL spots have been observed during current week as compared to 0.97% % in last week and 1.49% during the same corresponding period of last year. And 41.77% below ETL spots have been observed during current week as compared to 41.77% in last week and 70.70% during the same corresponding period of last year.



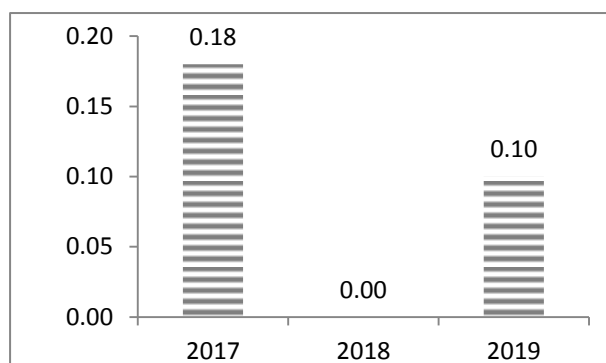
Jassid: On overall Punjab basis 1.07% above ETL spots has been observed as compared to 1.07% in last week and same week of last year 7.65%. And 33.94% below ETL spots have been observed during current week as compared to 33.94% in last week and 67.26% during the same corresponding period of last year.



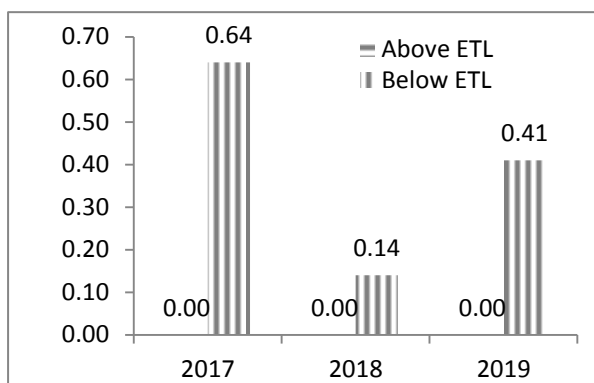
Thrips: On overall Punjab basis 0.38% above ETL spots have been observed as compared to 0.38% in last week and same week of last year i.e. 0.45%. And 43.95% below ETL spots have been observed during current week as compared to 43.95% in last week and 62.92% during the same corresponding period of last year.



Mealy Bug: On overall Punjab basis 0.10% spots (all considered above ETL) of Mealy Bug have been observed as compared to 0.10% in last week and 0.23% spots during the same corresponding period of the last year.

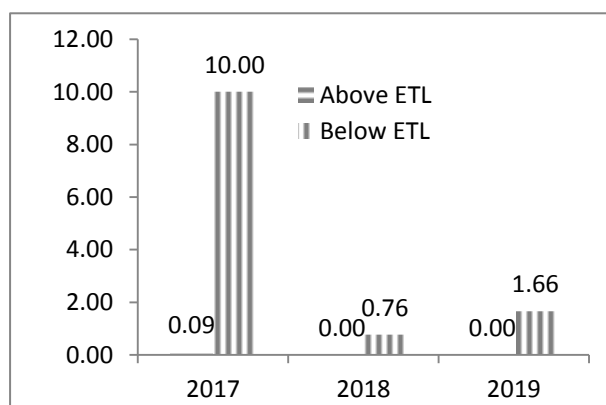


Mites: On overall Punjab basis 0.00% above ETL spots have been observed during current week as compared to 0.00% in last week and 0.00% during the same corresponding period of last year. And 0.41% below ETL spots have been observed during current week as compared to 0.41% in last week and 0.39% during the same corresponding period of last year.

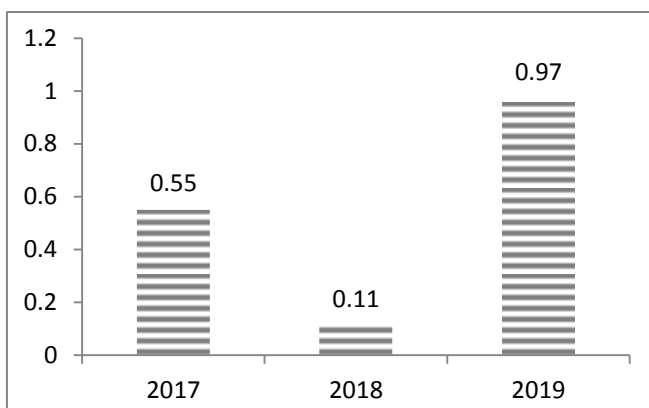


No hot spot for 3rd week of June in 2017, 2018 and 2019.

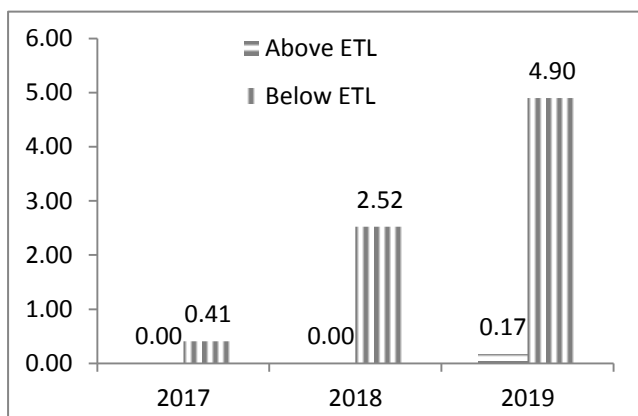
Dusky Cotton Bug: On overall Punjab basis 0.00% above ETL spots have been observed during current week as compared to 0.00% in last week and 0.00% during the same corresponding period of last year. And 1.66% below ETL spots have been observed during current week as compared to 1.66% in last week and 2.37% during the same corresponding period of last year.



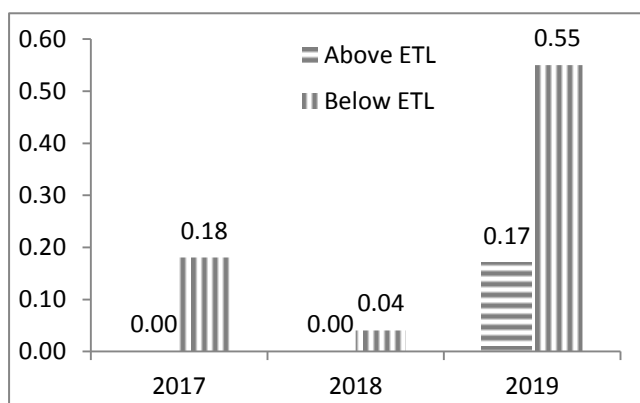
Armyworm: On overall Punjab basis 0.97% spots (all considered above ETL) of Armyworm have been observed as compared to 0.97% in last week and 0.19% spots during the same corresponding period of the last year.



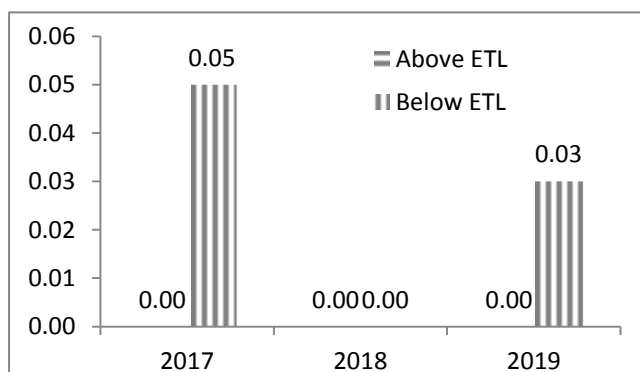
Pink Boll Worm: On overall Punjab basis 0.17% above ETL spots have been observed as compared to 0.17% in last week and 0.03% same corresponding period of the last year. And 4.90% below ETL spots have been observed as compared to 4.90% in last week and 1.36% during same corresponding period of last year.



American Bollworm: On overall Punjab basis 0.07% above ETL spots have been observed as compared to 0.07% in last week and 0.00% during same corresponding period of last year. And 0.55% below ETL spots have been observed as compared to 0.55% in last week and 0.03% 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 & 0.03% below ETL spots have been observed as compared to 0.03% in



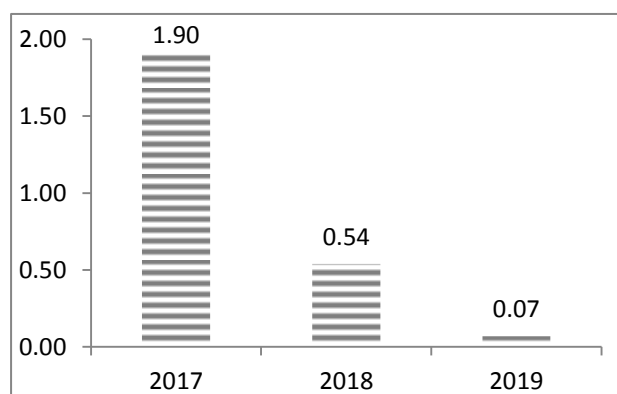
last week and 0.00% during same corresponding period of last year.

Tehsil wise percentage of hot spots of spotted boll worm

No hot spot found yet.

CLCuV: On overall Punjab basis 0.07% spots (all considered above ETL) of CLCV

have been observed as compared to 0.07% in last week and 1.33% during the same corresponding period of the last year.



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	38.75	30.13	64.86	0.00	34.14	27.71	34.79	8.30
Khanewal	42.14	28.71	40.57	2.00	39.97	27.53	59.57	19.00
Vehari	42.86	31.07	43.00	0.00	39.00	28.00	53.36	0.00
Lodhran	39.00	28.57	50.00	7.00	40.57	29.29	46.14	0.00
Sahiwal	39.40	27.00	49.07	0.00	38.30	25.30	61.20	10.00
Pakpattan	40.43	27.14	40.57	0.00	41.29	27.71	32.57	0.00
Okara	38.50	25.90	70.00	14.00	30.10	21.70	47.00	25.00
Bahawalpur	40.89	28.21	48.93	9.00	37.10	26.16	66.07	98.00
Bahawalnagar	41.40	25.80	45.80	0.00	39.80	27.30	56.90	0.00
R.Y.Khan	43.43	29.57	0.00	0.00	39.76	27.37	66.78	0.00
D.G.Khan	42.86	29.57	53.79	4.00	43.29	29.43	58.57	5.00
M.Garh	37.20	25.80	45.30	4.00	33.90	23.31	72.35	12.00
Rajanpur	42.66	28.32	43.10	0.00	38.22	25.20	56.50	0.00
Layyah	43.60	30.00	45.40	15.00	41.40	27.70	41.00	37.00
AVERAGE	40.94	28.27	45.74	55.00	38.35	26.69	53.77	214.30

WEATHER FORECAST FOR NEXT 7 DAY IN COTTON ZONE

Division	Dated	28/6	29/6	30/6	1/7	2/7	3/7	4/7
Multan	Max.Temp.	34	31	35	39	40	41	36
	Min.Temp.	28	27	28	30	31	31	29
	Humidity %	44	55	49	42	40	34	30
Sahiwal	Max.Temp.	30	32	35	36	38	38	35
	Min.Temp.	27	26	27	29	30	31	27
	Humidity %	55	56	52	50	46	46	36
Bahawalpur	Max.Temp.	34	33	34	37	39	40	35
	Min.Temp.	29	28	28	30	30	30	27
	Humidity %	41	58	54	47	42	36	31
D.G. Khan	Max.Temp.	38	33	37	41	42	42	36
	Min.Temp.	29	29	29	31	31	31	28
	Humidity %	35	48	39	34	34	32	32
Average Cotton Region	Max.Temp.	36.46						
	Min.Temp.	28.96						
	Humidity %	42.79						

There is forecast of mostly cloudy weather for seven days in cotton zone during next week. So, it is forecasted that decreased temperature for next week in cotton zone (Southern Punjab) may provide the favorable environment for proliferation of some insect pests on cotton crop.

Forecast of Sucking Pests:

Whitefly: This pest flourish best in hot dry climate with optimum temperature 35-40 °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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that population of this pest will sustain during the coming week.

Jassid: This pest flourish best in hot 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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max.

36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week.

Thrips: This pest flourish 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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that population of this pest may sustain during the coming week.

Mealy Bug: This pest flourish best moderate climate with optimum temperature 35-50 °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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that population of this pest may sustain on cotton crop during the coming week.

Mites: This pest flourish 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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that population of this pest may sustain on zero during the coming week due to low humidity increased.

Aphid: This pest flourish best moderate climate with optimum temperature 15-33°C with relative humidity above 50-80%. Maximum lethal temperature for this pest is 45-51 °C. The current weather conditions on overall Punjab basis (temp. Max. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that attack of this pest is expected not to initiate during next week.

Dusky Cotton Bug: This pest flourish best moderate climate with optimum temperature 28-40 °C with relative humidity above 50-80%. The current weather conditions on overall Punjab basis (temp. Max. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that population of

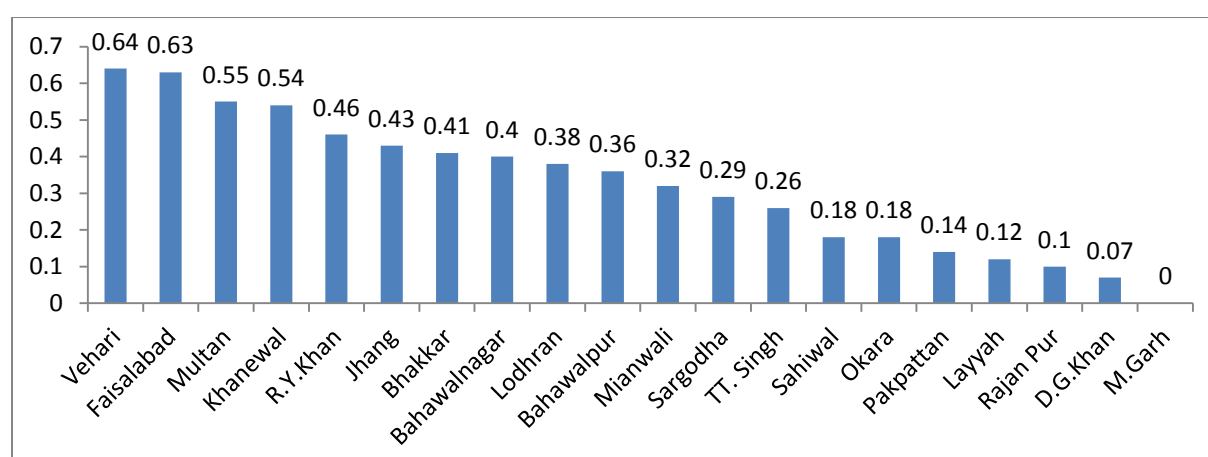
this pest may increase during the coming week due to increased humidity & favorable temperatures.

Pink Bollworm: This pest flourish 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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. it is predicted that population of this pest may increase in the next week on cotton.

Moth Catches in Pheromone Traps During 4 th Week of June, 2018			
District	Traps Installed	Moth catches/Trap/week	Av. Moth catches/Trap/night
Multan	6	23	0.55
Khanewal	8	30	0.54
Vehari	6	27	0.64
Lodhran	6	16	0.38
Sahiwal	5	5	0.18
Pakpattan	4	4	0.14
Okara	4	5	0.18
Bahawalpur	8	20	0.36
Bahawalnagar	10	28	0.40
R.Y.Khan	8	26	0.46
D.G.Khan	4	2	0.07
M.Garh	8	0	0.00
Rajan Pur	6	4	0.10
Layyah	6	5	0.12
Sargodha	1	4	0.29
Mianwali	2	9	0.32
Bhakkar	4	23	0.41
Faisalabad	5	22	0.63
TT. Singh	6	11	0.26
Jhang	4	12	0.43

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

District wise PBW moth catches graph



American Bollworm: Pest situation reveals that attack of ABW BETL on cotton has decreased as compared to last week and same period of last year. This pest flourish 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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79% and cultivation of more BT varieties. it is predicted that population of this pest may sustain on cotton crop.

Moth Catches on Light Traps/Trap/week During 4 th Week of June, 2018				
District	Traps Installed	A.B.W	S.B.W	Armyworm
Multan	3	3.0	0.0	3.7
Khanewal	4	2.5	0.0	7.8
Vehari	3	0.0	0.0	1.0
Lodhran	3	0.3	0.7	1.0
Sahiwal	2	1.0	0.0	1.5
Pakpattan	2	0.0	0.0	2.0
Okara	2	0.0	0.0	0.0
Bahawalpur	4	0.5	0.0	1.0
Bahawalnagar	5	0.4	0.8	1.4
R.Y.Khan	4	1.5	1.8	3.0
D.G.Khan	2	0.0	0.0	1.0
M.Garh	4	3.0	1.5	2.3
Rajan Pur	3	0.0	1.0	0.0
Layyah	3	0.0	0.0	4.0

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

Spotted Bollworm: This pest flourish 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. 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. due to cultivation of more BT varieties, it is predicted that population of this pest may sustain 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 40.94 °C, Min. 28.27 °C with R. humidity 45.74%) & forecast for the next week temp. Max. 36.46 °C, Min. 28.96°C with humidity 42.79%. Keeping in view above all, it is predicted that population of this pest may sustain during the coming week.

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
			Rattan jot
			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