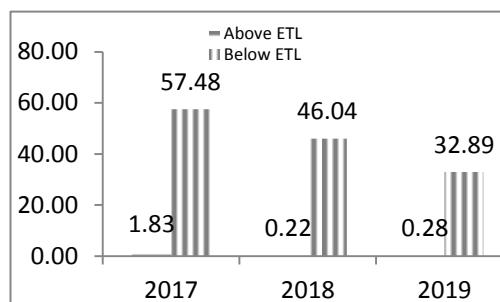


PEST SITUATION ON COTTON CROP IN PUNJAB DURING 2ND WEEK OF JUNE, 2019

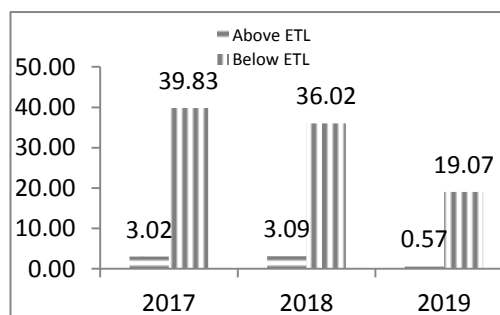
Whitefly: On overall Punjab basis 0.28% above ETL spots have been observed during current week as compared to 0.00% % in last week and 0.62% during the same corresponding period of last year. And 32.89% below ETL spots have been observed during current week as compared to 22.21% in last week and 46.04% 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	DEPALPUR	7.7	5	ARIF WALA	2.5
2	PAK PATTAN	4.8	6	MULTAN	1.8
3	JHANG	4.5	7	SAHIWAL	1.7
4	18-HAZARI	2.8	8	CHICHA WATNI	1.5

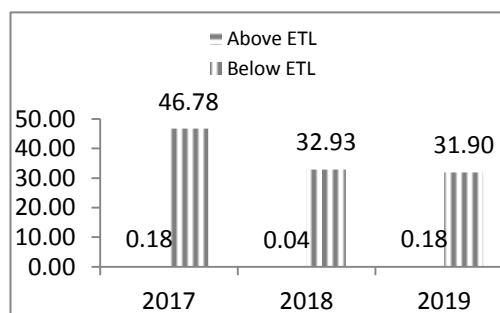
Jassid: On overall Punjab basis 0.57% above ETL spots has been observed as compared to 0.17% in last week and same week of last year 3.09%. And 19.07% below ETL spots have been observed during current week as compared to 12.15% in last week and 36.02% during the same corresponding period of last year.



Tehsil wise percentage of hot spots of jassid

S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	HASILPUR	7.1	6	SHUJABAD	3.8
2	ARIF WALA	5.0	7	MULTAN	3.6
3	CHISHTIAN	4.9	8	SAHIWAL	3.3
4	PAK PATTAN	4.8	9	A.P.SIAL	2.9
5	JHANG	4.5			

Thrips: On overall Punjab basis 0.18% above ETL spots have been observed as compared to 0.04% in last week and same week of last year i.e. 0.04%. And 31.90% below ETL spots have been observed during current week as compared to 20.50% in last

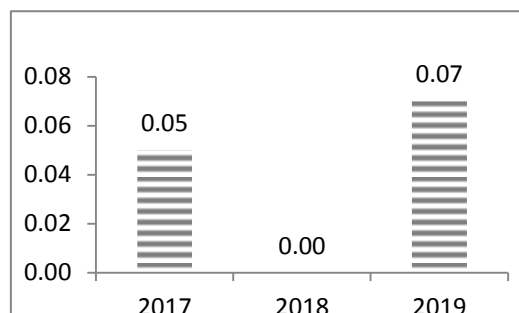


week and 32.93% during the same corresponding period of last year.

Tehsil wise percentage of hot spots of Thrips

S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	CHISHTIAN	4.9	3	SAHIWAL	1.7
2	CHICHA WATNI	3.0			

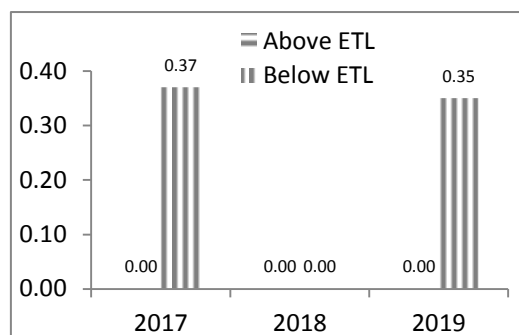
Mealy Bug: On overall Punjab basis 0.07% spots (all considered above ETL) of Mealy Bug have been observed as compared to 0.08% in last week and 0.00% spots during the same corresponding period of the last year.



Tehsil wise percentage of hot spots of mealy bug

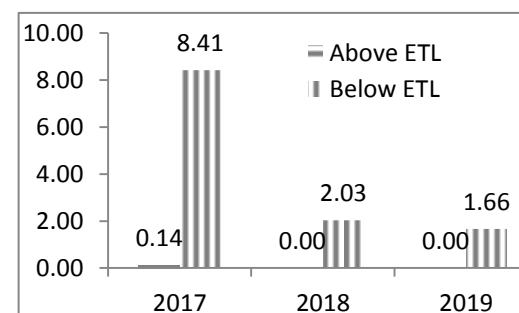
S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	CHISHTIAN	2.4	2	LODHRAN	1.4

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 0.01% during the same corresponding period of last year. And 0.35% below 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.

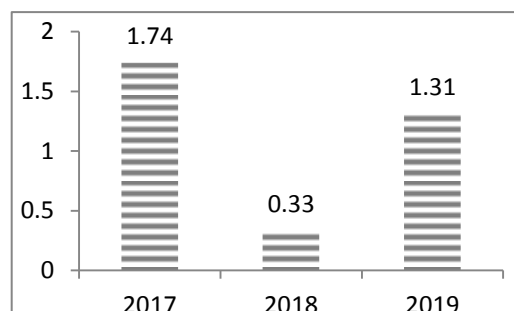


No hot spot for 2nd week of June in 2017, 2018 and 2019.

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 1.7% below ETL spots have been observed during current week as compared to 1.8% in last week and 2.0% during the same corresponding period of last year.



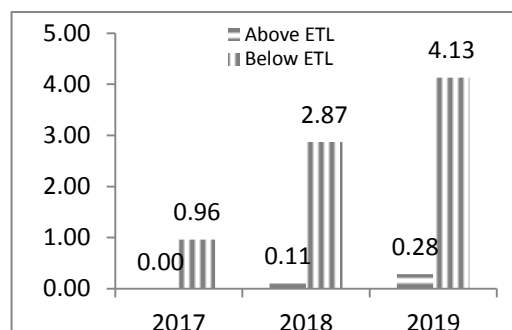
Armyworm: On overall Punjab basis 1.31% spots (all considered above ETL) of Armyworm have been observed as compared to 1.09% in last week and 0.33% spots during the same corresponding period of the last year.



Tehsil wise percentage of hot spots of army worm

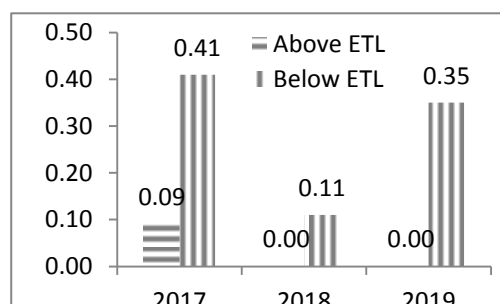
S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	JHANG	9.1	11	LODHRAN	2.8
2	MIAN CHANNU	8.0	12	TANDLIANWALA	2.8
3	DEPALPUR	7.7	13	ARIF WALA	2.5
4	T.T.SINGH	6.8	14	VEHARI	2.4
5	SAHIWAL	6.7	15	R.Y.KHAN	2.1
6	SUMUNDRI	6.7	16	JAHANIAN	2.0
7	KOT CHUTTA	5.2	17	LIAQUAT PUR	2.0
8	PAK PATTAN	4.8	18	SHUJABAD	1.9
9	CHICHA WATNI	4.5	19	MULTAN	1.8
10	PEER MEHAL	4.0			

Pink Boll Worm: On overall Punjab basis 0.28% above ETL spots have been observed as compared to 0.33% in last week and 0.11% same corresponding period of the last year. And 4.13% below ETL spots have been observed as compared to 4.01% in last week and 2.87% during same corresponding period of last year.



S. NO.	TEHSIL	%AGE	S.NO.	TEHSIL	%AGE
1	BAHAWAL PUR	5.8	4	MAILSI	1.9
2	KHAN PUR	4.9	5	JALAL PUR P.W	1.7
3	SHUJABAD	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 0.35% below ETL spots have been observed as compared to 0.29% in last week and 0.11% during same corresponding period of last year.



Tehsil wise percentage of hot spots of American boll worm

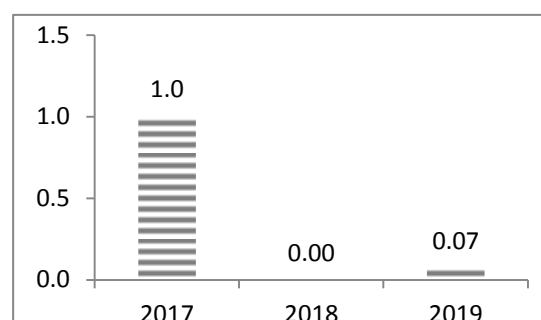
No hot spot found yet.

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 & 0.00% below ETL spots have been observed as compared to 0.00% 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 0.00% in last week and 0.00% 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	BAHAWAL PUR	5.8	4	MAILSI	1.9
2	KHAN PUR	4.9	5	JALAL PUR P.W	1.7
3	SHUJABAD	1.9			

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	43.50	30.70	47.64	0.00	40.10	31.40	59.60	2.00
Khanewal	43.20	28.88	38.00	0.00	44.50	32.00	41.60	3.00
Vehari	44.80	31.60	48.70	0.00	44.90	31.80	47.50	5.00
Lodhran	44.50	29.40	42.10	0.00	41.60	28.00	44.70	0.00
Sahiwal	43.15	26.55	38.78	0.00	42.00	26.00	42.82	3.00
Pakpattan	45.33	33.67	33.11	0.00	43.89	32.89	30.67	0.00
Okara	43.00	24.00	51.00	0.00	41.50	26.80	53.00	0.00
Bahawalpur	45.18	28.66	31.80	3.00	41.48	29.84	52.60	Traces
Bahawalnagar	46.13	27.63	27.13	0.00	43.50	28.75	43.00	5.00
R.Y.Khan	47.44	29.78	68.44	0.00	45.22	27.22	64.22	0.00
D.G. Khan	46.43	33.86	51.14	0.00	44.86	33.29	42.79	0.00
M. Garh	41.50	29.03	26.33	0.00	42.41	29.18	39.14	5.00
Rajanpur	43.28	29.9	64.90	0.00	44.56	31.64	40.64	7.00
Layyah	44.60	28.40	36.80	0.00	46.80	29.60	35.80	0.00
TOT/AVG	44.43	29.43	43.28	3.00	43.38	29.89	45.58	30.00

Weather forecast for next 7 day in cotton zone

Division	Dated	14/6	15/6	16/6	17/6	18/6	19/6	20/6
Multan	Max.Temp.	44	44	42	44	40	40	38
	Min.Temp.	29	32	29	30	29	29	30
	Humidity %	14	29	27	22	35	30	23
Sahiwal	Max.Temp.	44	44	39	42	39	41	38
	Min.Temp.	27	30	26	27	28	27	31
	Humidity %	11	17	31	21	35	21	16
Bahawalpur	Max.Temp.	44	42	41	43	41	40	39
	Min.Temp.	28	32	28	30	32	31	28
	Humidity %	18	24	30	23	28	32	22
D.G. Khan	Max.Temp.	44	44	42	44	42	41	39
	Min.Temp.	28	32	31	30	29	29	30
	Humidity %	14	18	30	25	23	36	18
Average Cotton Region	Max.Temp.	41.61						
	Min.Temp.	29.36						
	Humidity %	24.04						

Source: timeanddate.com

Summary of weather forecast

Overall weather for seven days in cotton zone during next week will remain very hot and dry.

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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week.

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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. Keeping in view above all, it is predicted that population of this pest will increase 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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. 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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. 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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. Keeping in view above all, it is predicted that population of this pest will increase 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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. Keeping in view above all, it is predicted that population of this pest will decrease during the coming week.

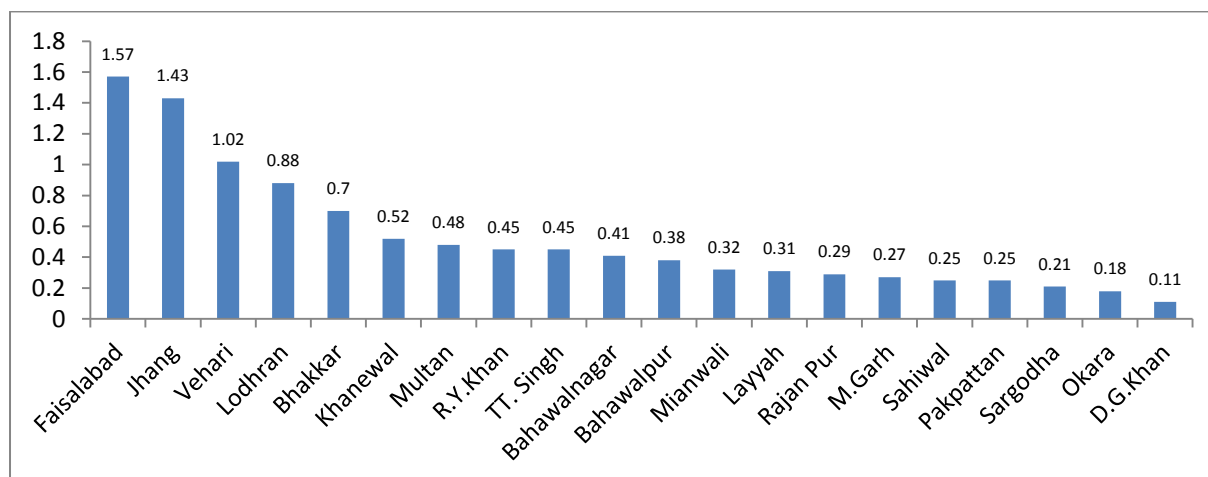
Pink Bollworm: Although PBW moths catches have been observed in pheromone installed traps in various cotton districts as given in the Table 13, Pest situation reveals that its population on (above ETL) has decreased as compared to last week and increased as compared to same week of last year on cotton 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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. It is predicted that population of this pest will decrease on cotton during the coming week.

Moth Catches in Pheromone Traps during 2nd Week of June, 2019

Moth Catches in Pheromone Traps During 2 nd Week of June, 2019			
District	Traps Installed	Av. Moth catches/Trap/night	Av. No. of Moths other than PBW/ Trap/Night
Multan	6	0.48	0.0
Khanewal	8	0.52	0.04
Vehari	6	1.02	0.00
Lodhran	6	0.88	0.05
Sahiwal	4	0.25	0.00
Pakpattan	4	0.25	0.00
Okara	4	0.18	0.00
Bahawalpur	8	0.38	0.09
Bahawalnagar	10	0.41	0.10
R.Y.Khan	8	0.45	0.20
D.G.Khan	6	0.11	0.00
M.Garh	8	0.27	0.00
Rajan Pur	6	0.29	0.00
Layyah	6	0.31	0.00
Sargodha	2	0.21	0.00
Mianwali	4	0.32	0.00
Bhakkar	9	0.70	0.00
Faisalabad	5	1.57	0.00
TT. Singh	6	0.45	0.00
Jhang	4	1.43	0.00

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

Av. Moth catches/Trap/night



American Bollworm:

Moth catches in light traps show the emergence of ABW, however, the pest may breed/increase on vegetables and other host plants. Its moths have been observed in almost all districts except DG Khan division and district Vehari. No hot spot has been observed of this pest like same week of last year on cotton crop. However below ETL population has been increased as compared to last week and same week of last year. 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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. It is predicted that population of this pest will sustain on cotton crop during the coming week.

Moth catches on light traps during 2nd week of June, 2019

Moth Catches on Light Traps/Trap/week During 2 nd Week of June, 2019				
District	Traps Installed	A.B.W	S.B.W	Armyworm
Multan	3	3	1	10
Khanewal	4	3	0	24
Vehari	3	0	0	4
Lodhran	3	4	0	7
Sahiwal	2	5	0	4
Pakpattan	2	2	0	0
Okara	3	9	0	1
Bahawalpur	4	3	0	7
Bahawalnagar	5	6	0	10
R.Y.Khan	4	7	3	17
D.G.Khan	3	0	0	0
M.Garh	4	0	0	6
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: Light traps data shows its emergence in Multan and Rahim Yar Khan but it may not be a problem on cotton at this stage. No spot has been observed of this pest like same week of last year on cotton crop. 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. 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. Due to cultivation of more BT varieties, it is predicted that population of this pest will remain zero on cotton crop in the coming week.

Armyworm: Its moth population has been observed on light traps in all districts except Pakpattan, DG Khan, Rajanpur and Layyah. Pest situation reveals that attack of Armyworm has increased as compared last week and same week of last year. 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 44.43 °C, Min. 29.43°C with R. humidity 43.28%) & forecast for the next week temp. Max. 41.68°C, Min. 29.36°C with humidity 24.04%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week.

CLCuV: CLCUV spots slightly increased from last week and same week of last year on cotton crop. The incidence of this disease is expected to increase on cotton crop in next 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