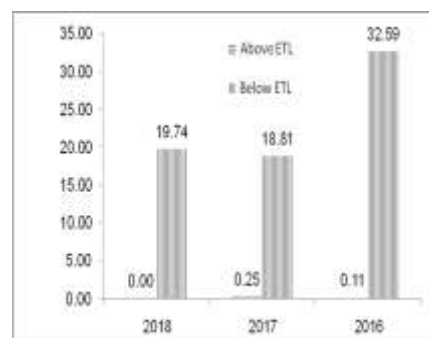


PEST SITUATION ON COTTON CROP IN PUNJAB DURING 3RD WEEK OF MAY, 2018

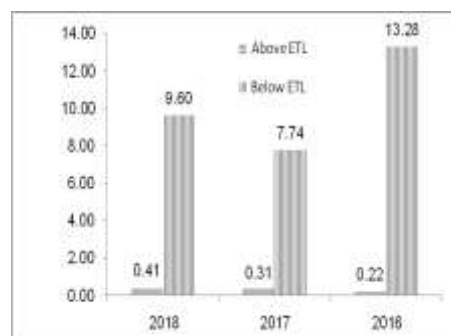
Whitefly:

On overall Punjab basis **0.00%** spots above ETL have been observed during current week as compared to **0.25%** during the same corresponding period of last year & **19.74%** spots below ETL have been observed during current week as compared to **18.81%** during the same corresponding period of last year. The decrease in its population above ETL as compared to same corresponding period of last year is due to ban on early sown of cotton by implementing Sec. 144 and effective measures taken by farmers for seed treatment due to field work.



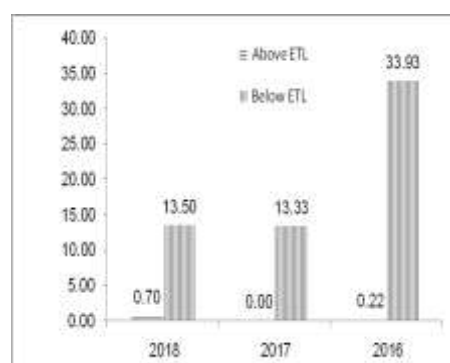
Jassid:

On overall Punjab basis **0.41%** ABETL has been observed as compared to same week of last year **0.31%** & BETL **9.60%** spots have been observed during current week as compared to **7.74%** during the same corresponding period of last year. Slight increase in its population AETL is due to shifting of this pests from vegetables especially Okra in Mian Channu and Chicha Watni as it is a multi cropping area.



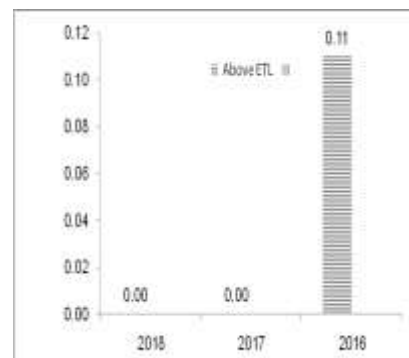
Thrips:

On overall Punjab basis **0.07** AETL has been observed as compared to same week of last year i.e. **0.00%** & BETL **13.50%** spots have been observed during current week as compared to **13.33%** during the same corresponding period of last year. Slight increase in its population is due to shifting of this pests from vegetables especially onion in Lodhran.



Mealy Bug:

On overall Punjab basis **0.00%** spots of **Mealy Bug** have been observed as compared to **0.00%** during last week & **0.0%** spots during the same corresponding period of the last year. The decrease in its population is due to campaign launched by agriculture department (Pest Warning) during off season on weeds, ornamentals and along side roads, banks of canals and due to ban imposed on sowing of early cotton under section 144.



Mites:

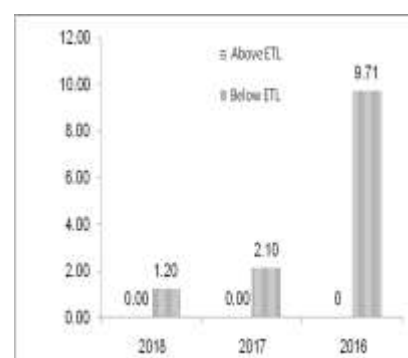
On overall Punjab basis **0.00%** spots above ETL have been observed during current week as compared to **0.00%** during the same corresponding period of last year & **0.00%** spots below ETL have been observed during current week as compared to **0.00%** during the same corresponding period of last year. The decrease in its population is due to ban on early sown cotton by implementing Sec. 144 and effective measures taken by farmers for seed treatment due to field work.

Aphid:

On overall Punjab basis **0.00%** spots below ETL have been observed during current week as compared to **0.00%** during the same corresponding period of last year. As this pest flourish best on the early cotton in comparatively cooler months of March and April so the decrease in its population is due to ban on early sown cotton by implementing Sec. 144 and effective measures taken by farmers for seed treatment due to field work.

Dusky Cotton Bug:

On overall Punjab basis **0.00%** spots above ETL have been observed during current week as compared to **0.00%** during the same corresponding period of last year & **1.2%** spots below ETL have been observed during current week as compared to **2.1%** during the same corresponding period of last year. The decrease in its population as compared to the same corresponding period of last year is due to ban on early sown cotton by implementing Sec. 144 and

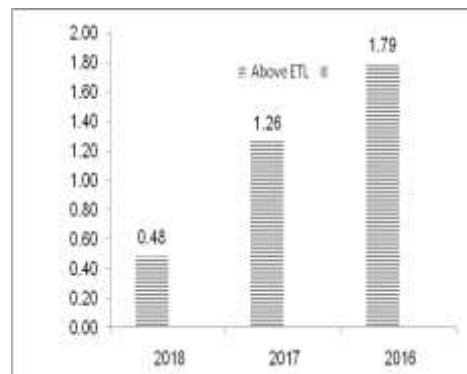


effective measures taken by farmers for seed treatment due to field work and awareness campaign of the PW & QCP field formations.

Armyworm:

On overall Punjab basis **0.48%** spots of **Armyworm** have been observed as compared to **1.26%** spots during the same corresponding period of the last year.

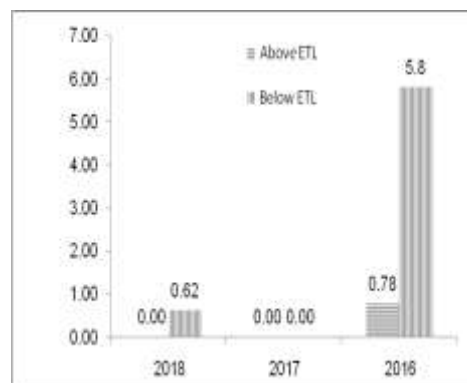
The decrease in its population as compared to the same corresponding period of last year is due to ban on early sown cotton by implementing Sec. 144 and effective measures taken by farmers for seed treatment due to field work. The spots AETL of Armyworm have been detected in tehsils Mian Channu, Sahiwal, Chichawatni, Jhang and Samundri.



Pink Boll Worm:

On overall Punjab basis **0.00%** spots of **PBW** Above ETL have been observed as compared to **0.00%** same corresponding period of the last year & **0.62%** spots of **PBW** below

ETL have been observed as compared to **0.00%** during same corresponding period of last year due to early sowing of cotton in violation of Section 144. The decrease in its population above ETL is mainly due to sowing of Bt cultivars, ban



on early sown of cotton by implementing Sec. 144 and effective measures taken by farmers for off season management of PBW by turning heaps of cotton sticks, collection & disposal of PBW effected bolls, disposal of cotton ginning wastes in ginning factories, oil mills, brick/ kilns etc due to field work. The spots BETL of Pink Bollworm have been detected in tehsils Vehari, Mailsi, Burewala, Lodhran and Hasilpur.

American Bollworm:

On overall Punjab basis **0.00%** spots of **ABW** above ETL have been observed as compared to **0.00%** during same corresponding period of last year & **0.00%** spots of **ABW** below ETL have been observed as compared to **0.00%** during same corresponding period of last year. The decrease in its population as compared to

same period of last year is mainly due to sowing of Bt cultivars and due to ban on early sown of cotton by implementing Sec. 144.

Spotted Bollworm:

On overall Punjab basis **0.00%** spots of **SBW** above ETL have been observed as compared to **0.00%** during same corresponding period of last year & **0.00%** spots of **SBW** below ETL have been observed as compared to **0.00%** during same corresponding period of last year. The decrease in its population below ETL as compared to same period of last year is mainly due to sowing of Bt cultivars and ban on early sown of cotton by implementing Sec. 144.

METEOROLOGICAL DATA OF THE CURRENT WEEK 2018-2017

Districts	2018				2017			
	Temperature		R.H%	Rainfall (mm)	Temperature		RH%	Rainfall (mm)
	Max.	Min.			Max.	Min.		
Multan	37.33	27.50	54.25	4.00	39.83	28.67	65.17	0.10
Khanewal	42.00	26.71	36.86	0.70	43.26	28.10	32.57	0.00
Vehari	42.17	27.83	47.92	0.40	39.17	25.50	39.25	0.00
Lodhran	37.00	25.43	39.64	0.29	40.71	24.57	40.36	0.29
Sahiwal	36.70	24.70	44.30	0.00	43.80	25.80	41.57	0.00
Pakpattan	42.29	27.57	24.86	0.00	43.29	28.57	24.57	0.00
Okara	37.80	25.70	63.00	0.00	39.60	26.20	70.00	0.00
Bahawalpur	38.14	25.26	44.14	6.00	40.50	24.24	45.50	13.70
Bahawalnagar	40.90	28.40	36.07	0.00	44.36	28.43	31.60	0.00
R.Y.Khan	42.00	25.50	46.30	0.00	44.75	26.25	47.56	0.00
D.G.Khan	38.57	22.57	54.86	2.00	38.43	22.86	48.32	0.00
M.Garh	41.51	26.01	30.79	0.00	41.54	28.51	36.35	0.00
Rajanpur	39.45	27.92	61.75	0.00	38.75	23.90	37.12	0.50
Layyah	37.40	25.80	62.80	6.00	43.60	27.20	28.20	0.00
AVERAGE	39.52	26.21	46.25	19.39	41.54	26.34	42.01	14.59

WEATHER FORECAST FOR NEXT 7 DAY IN COTTON ZONE

Division	Dated	21/5	22/5	23/5	24/5	25/5	26/5	27/5
Multan	Max.Temp.	40	40	41	42	43	45	40
	Min.Temp.	25	25	25	27	27	28	33
	Humidity %	13	10	10	9	9	7	5
Sahiwal	Max.Temp.	40	42	42	42	44	45	41
	Min.Temp.	26	26	24	24	26	26	32
	Humidity %	12	10	9	9	8	7	4
Bahawalpur	Max.Temp.	40	41	41	43	43	46	42
	Min.Temp.	28	26	25	26	27	27	30
	Humidity %	12	9	9	8	8	7	5
D.G. Khan	Max.Temp.	40	40	41	42	43	46	41
	Min.Temp.	26	25	27	26	27	30	34
	Humidity %	11	10	9	8	8	6	6
Average Cotton Region	Max.Temp.	42.00						
	Min.Temp.	27.07						
	Humidity %	8.50						

There is forecast of Mostly Sunny weather for Seven days in cotton zone during next week. So, it is forecasted that increased temperature for next week in cotton zone

(Southern Punjab) may provide the conducive 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 35-50 °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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. Keeping in view above all, it is predicted that population of this pest will increase 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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C Min. 27.07 °C with humidity 8.50%. 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 35-50 °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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. Keeping in view above all, it is predicted that population of this pest may increase 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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. Keeping in view above all, it is predicted that population of this pest may start 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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. Keeping in view above all, it is predicted that population of this pest will increase during the coming week due to low humidity & high temperature.

Aphid:

This pest flourish best moderate climate with optimum temperature 15-33⁰C 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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. Keeping in view above all, it is predicted that attack of this pest is not expected during the coming week due to low humidity & high temperature.

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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. Keeping in view above all, it is predicted that population of this pest will decrease during the coming week due to low humidity & high temperature.

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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. As early cotton sowing was banned in the Punjab by implementing Section 144 and due to a successful off season management campaign by PWQCP, and due to early stage of crop it is predicted that population of this pest may increase in the next week on cotton.

Moth Catches in Pheromone Traps During 3 rd Week of May, 2018			
District	Traps Installed	Moth catches/T rap/week	Av. Moth catches/Trap/ night
Multan	6	36	0.86
Khanewal	8	32	0.57
Vehari	6	58	1.38
Lodhran	6	36	0.86
Sahiwal	5	9	0.32
Pakpattan	4	2	0.07
Okara	4	5	0.18
Bahawalpur	8	21	0.38
Bahawalnagar	10	24	0.34
R.Y.Khan	8	7	0.13
D.G.Khan	4	4	0.14
M.Garh	8	18	0.32
Rajan Pur	6	6	0.14
Layyah	6	10	0.24
Sargodha	1	0	0.00
Mianwali	2	40	1.43
Bhakkar	4	35	0.63
Faisalabad	5	56	1.60
TT. Singh	6	24	0.57
Jhang	4	6	0.21

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

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 Multan, Khanewal, Lodhran, Sahiwal, Bahawalpur, Bahawalnagar, R.Y.Khan, D.G. Khan and Muzaffar Garh.

Pest situation reveals that attack of ABW BETL on cotton has decreased as compared to same period of last year. This pest flourish best at dry & moderate climate with optimum temperature 32-40 °C with relative

Moth Catches on Light Traps/Trap/week During 3 rd Week of May, 2018				
District	Traps Installed	A.B.W	S.B.W	Armyworm
Multan	3	2.7	0.0	3.7
Khanewal	4	3.3	0.0	8.5
Vehari	3	0.0	0.0	3.3
Lodhran	3	1.3	1.3	3.3
Sahiwal	2	1.0	0.0	1.0
Pakpattan	2	0.0	0.0	1.0
Okara	2	0.0	0.0	0.0
Bahawalpur	4	0.5	0.5	1.0
Bahawalnagar	5	1.2	0.6	1.8
R.Y.Khan	4	2.3	1.5	2.8
D.G.Khan	2	0.5	0.5	0.0
M.Garh	4	1.8	3.5	3.5
Rajan Pur	3	0.0	0.0	0.3
Layyah	3	0.0	0.0	3.3

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

humidity above 50-70%. Maximum lethal temperature for this pest is 45-53 °C. The current weather conditions on overall Punjab basis (temp. Max. 39.52 °C, Min. 26.21

°C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. As early cotton sowing was banned in the Punjab by implementing Section 144 and cultivation of more BT varieties, so keeping in view above all, it is predicted that population of this pest may sustain on cotton crop.

Spotted Bollworm:

Light traps data shows its emergence but it may not be a problem on cotton at initial stage, Since Hot & Dry weather does not favor its multiplication it can breed and increase on Okra crop. Its appearance has been observed in districts Lodhran, Bahawalpur, Bahawalnagar, R.Y.Khan, D.G. Khan and Muzaffar Garh. Pest situation reveals that there is no attack of SBW AETL & BETL on cotton in this week and same week of the last year. 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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. As early cotton sowing was banned in the Punjab by implementing Section 144 and 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. 39.52 °C, Min. 26.21 °C with R. humidity 46.25%) & forecast for the next week temp. Max. 42.00 °C, Min. 27.07 °C with humidity 8.50%. Keeping in view above all, it is predicted that population of this pest may increase 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
	Cucurbits	Pomegranate	Maina	
	Tomato	Ber (<i>Zizyphus</i>)	Karund	
	Cabbage	Guava	Lehli	
	Cauliflower	Mulbery		
	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 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.

S#	Common Name	Brand Name	Dose/Acre
1	Dimethoate 40% + Diver (Mineral oil) 97%	Denadim, Progress, Casper	200 ml + 1000 ml
2	Profenofos50%+ Diver (Mineral oil) 97%	Curacron, Blast	200ml + 1000 ml
3	Chlorpyrifos 40 EC+ Diver (Mineral oil) 97%	Lorsban, Larvae	200ml+ 1000 ml
4	Profenofos 50EC		800 ml
5	Chlorpyrifos 40 EC		1000 ml
6	Carbosulfan 20EC	Advantage	500 ml
7	Methidathion 40 EC	Supracide	400 ml
8	Methomyl 42SP	Lannate	300 gm
9	Profenofos + Lambda 61.5 EC	Border	500 ml

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 ARMYWORM

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.

S#	Common Name	Brand Name	Dose/Acre
1	Lufenuron 5 EC	Match, Drone, Catch, Rozol, Snatch, Track, Ardent	200 ml
2	Emamectin Benzoate 1.9%EC	Proclaim, Timer, Victory, Smash, Tycon, Wel Star, Wright, Rider	250 ml
3	Tebufenazide 20%WP	Falcon, Top Gun	350 gm
4	Flubendamide 480 SC	Belt	25-50 ml
5	Methoxyfenozide 240 SC	Runner	200 ml
6	Chlorantraniliprole 20 SC	Coragen	50 ml
7	Spintoram 120 SC	Radiant	100 ml

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 CLCV

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 or Nymphs or both per Leaf
Thrips	8-10 Adults or Nymphs per Leaf
Cotton mealybug	On appearance
Mites	On damage appearance
Spotted Bollworm	3 Larvae/ 25 plants.
Pink Bollworm	5 Larvae /100 bolls.
<i>Helicoverpa</i>	5 brown eggs or 3 small larvae or both 5 per 25 plants on non Bt varieties. 2 larvae of 2 nd instar per 25 plants on Bt varieties.
Armyworm	On appearance
Aphid	Spray on visible damage on top terminals.
Dusky Cotton bug	10 per leaf/bud