XXVI. 4 : PEST AND DISEASE IN MAJOR CROPS

S. No.	Crop	Pest	Remedial measures	Districts
4	Mango	Anthracnose	Proper sanitation of orchard by periodical removal of fallen plant debris and pruning of trees eradicates the fungus and checks further spread of the disease.	All districts.
			Maintaining tree vigour with proper irrigation and fertilization. Fungicide sprays should begin when panicles first appear and continue at the recommended intervals until fruits are picked.	
			Spraying the trees twice with Carbendazim (0.1%) or Mancozeb (0.2 %) or combination of Carbendazim 12 % + Mancozeb 63 % @ 0.1 % at 15 days interval during flowering to control blossom infection and twice during pea nut stage to prevent fruit infection.	
			Alternate sprayings of Carbendazim and Mancozeb to avoid development of resistance in pathogen to fungicides .	
			Spraying five times with Pseudomonas fluorescens FP 7 (0.5%) from flowering until harvest at 3 weeks interval reduces anthracnose incidence and improves fruit quality.	
			For post harvest anthrcanose, fruits are dipped in hot water at 50 C for 30 min. in combination with 0.05 % carbendazim.	
		Powdery mil-dew	Pruning of diseased leaves and panicles.	All districts.
			Three sprays of fungicides at different stages starting with Wettable Sulphur (0.2%) at the time of panicle initiation followed by Dinocap (0.1%) .	
		Mango malfor-mation	Diseased plants should be destroyed Use of disease free planting material	All districts.
			Incidence reduced by spraying 100-200ppm NAA during October. Pruning of diseased parts along the basal 15-20 cm apparently healthy portions followed by the spraying of Carben-dazim (0.1%).	All districts.

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S. No.	Crop	Pest	Remedial measures	Districts
	Banana	Fusarium wilt	Considering the long-term survival of F. oxysporum f. sp. cubense in soil, proper field sanitation, use of disease free planting material/ tissue culture plants can reduce disease incidence	All districts.
			Severely affected plants should be uprooted and burnt. Highly infected soil should not be replanted with banana at least for 3-4 years	
			An integrated approach for management of Fusarium wilt has to be followed by use of pathogen free suckers, pairing of suckers (Sucker treatment with Carbofuran granules@ 40 g / sucker before planting), Sucker dipping with 0.2 % carbendazim for 45 minutes at the time of planting , corm injection with 2% Carbendazim (3ml/plant) or capsule application with Carbendazim (50mg/capsule)/ at 3rd, 5th and 7th month after planting will offer protection to the wilt susceptible cultivars .	
			Application of Trichoderma viride or Pseudomonas fluorescens @ 50g/ plant at the time of planting and at 4th , 6th and 8th month reduces the disease incidence	
		Banana Bunchy Top Disease	Eradication of infected plants and sword suckers. Strict quarantine measures to be followed	All districts.
			Ensure virus free planting materials.	
			Avoid cucurbitaceous crops around banana field	
			Spraying dimethoate 0.1 % for vector control Destroy bunchy top virus affected plants by capsule application of 200 mg of 2,4 -D / capsule in to corm (7 cm deep) using capsule applicator or inject 5 ml of 2,4-D solution (125 g / lit.) in pseudostem using injector.	
			Removal of weeds	

XXVI. 4 : PEST AND DISEASE IN MAJOR AGRICULTURAL / HORTICULTURAL CROPS

S. No.	Crop	Pest & Disease	Month of incidence	Remedial measures/ Acre	Districts
1	Rice	Stem borer	July & August	Cartap hydrochloride 50 SP 400g/ac.	
				Chlorantraniliprole 18.5 SC @ 60 ml/ac.	All districts.
				Spray Neem seed kernel Extract 5%	
		Whorl maggot and rice hispa	July & August	Emamectin benzoate 1.9% EC 170 ml/ Ac	Thanjavur& Coim-batore.
				Fipronil 5% SC @ 400 g/ac	
		Green leaf hopper	July	Imidaclopride 17.8 % 60 ml/ac.	Transplanted rice fields.
				Carbosulfan 25EC @ 400 ml/ac	
		Leaf folder	October	Neem seed Kernel extracts 5%	
				Carbosulfan 25EC @ 400 ml/ac	All districts.
				Flubendiamide 20% WG 50 g/ac.	
		Brown plant hop-per	November & Decem-ber	Carbosulfan 25EC @ 400 ml/ac	Paddy growing areas.
				Imidaclopride 17.8 % 60 ml/ac.	
				Chlorantraniliprole 18.5 SC @ 60 ml/ac.	
		Gall Midge	December - January	Fibronil 5 % SC@ 500 gm/ ac Thiomethaxam 25 % WG @ 40 gm/ ac	Delta districts
		Rice Blast	October	Picoxystrobin 22.52% w/w SC 240 ml/ Acre Pseudomonas fluorescens -1 Kg/ Acre	All districts.
		Bacterial leaf blight	June	Copper Hydroxide 53.8% DF 600 gm/ acre	
		Lakshmi disease	January & February	Copper Hydroxide 77% WP - 800 gm/ acre	
2	Cumbu	Shoot fly	July & August	Imidacloprid 48.00% FS 480 ml/ acre	
		Ergot or sugary disease	July & August	Propiconazole 200 ml/ac.	

XXVI. 4 : PEST AND DISEASE IN MAJOR AGRICULTURAL / HORTICULTURAL CROPS

S. No.	Crop	Pest & Disease	Month of incidence	Remedial measures/ Acre	Districts
3	Maize	Fall Army Worm	Thorughout the year	Pheramone trap - 5 Nos/ Acre	Maize growing districts.
				Azadirachtin 1% EC 400 ml/ac	
				Spinetoram 11.7% w/w SC - 100 ml / acre	
				Flubendiamide 480 SC 60 ml	
				Chlorantraniliprole 18.5% SC -80 ml/ acre	
				Emamectin benzoate 5% SG -80 gm/ Acre	
4	Sorghum	Shoot fly	November & Decem-ber	Imidacloprid 48.00% FS 480 ml/ acre	Sorgum growing districts.
		Earhead bug	January	Neem seed Kernel extracts 5%	
				Phosalone 04.00% DP -10 Kg/ Acre	
5	Ragi	Neck blast	January & February	Zineb75%WP - 600 to 800 gm/ Acre	Ragi growing dis-tricts.
				Carbandazim 200 gm/ acre	
				Pseudomonas fluorescens -2 gm/ Lit	
6	Pulses	Aphid and yellow mosaic virus	March - April	Imidacloprid 17.8 % 100 ml/ac.	All districts.
				Use Resistant varieties VBN4,VBN6,VBN7	
		Powdery mildew and leaf spot	November & Decem-ber	Propiconazole 200 ml/ac.	All districts.
				Neem seed Kernel extracts 5%	
				Carbandazim 200 gm/ acre	
7	Ground Nut	White grub	All seasons	Carbofuran 3 G @ 20 kg/ac	Dindigul.
				Fipronil 40.0%+Imidacloprid 40.0% WG -120 gm / acre	
		Leaf spot	August & October	Carbendazim @ 2 g/ltr	All districts.
				Hexaconazole @ 2 ml/ac	
		Leaf miner	July	Oxydemeton-methyl 25.00% EC -400 ml/ Acre	All districts.
8	Gingelly	Leaf webber	August & February	Neem seed Kernel extracts 5%	Gingelly growing districts.

XXVI. 4 : PEST AND DISEASE IN MAJOR AGRICULTURAL / HORTICULTURAL CROPS

S. No.	Crop	Pest & Disease	Month of incidence	Remedial measures/ Acre	Districts
9	Cotton	Cotton Pink Boll Worms	December - January	Yellow sticky traps 5 No/ac.	All cotton growing districts
				Phermone traps 5 No/ac.	
				Imidacloprid 17.8 % SL @ 40 ml/ac.	
				Profenophos 50 % EC - 800 ml/ Acre	
		Stem weevil	July & December	Chlorpyriphos @ 2.5 ml + Carbendazim 1g/ltr.	
		Aphid, White fly , Jassids &Thrips	October	Acetamipride 20 SP @ 40 g/ac. Buprofezin 25.00% SC - 400 ml/ acre	Coimbatore, Dharmapuri, Madurai, Perambalur & Tirunelveli.
10	Coconut	Rugose spiraling whitefly	May, June & November	Encarsia parasitoids -100 nos./ Acre , chrysopids-400 / acre, Yellow sticky traps 5 No/ac, Neemoil 3% spray	All coconut growing districts
		Rhinocerous beetle		1.Metarhizium anisoplae - 1 Kg/ Manure pit 2.Application of neem seed powder+ sand(1:2 ratio) - 150 gm/ Palm	
		Red palm weevil		Setting up of attractat traps containing sugarcane molasses 21/2 kg or toddy 21/2 litres + acetic acid 5 ml+ yeast 5 gm + logitudinally split tender coconut stem of green petiole of leaves of 30 numbers in one acre to trap adult red palm weevil Pheramone trap @ 1per 2 ha	
		Black headed caterpillar		Release of larval of (Bethylid) , Bracconids and Ichneumonid @ 3000/ ha	
		Bud rot		Spray 1 % Bordeaux minstrue or copper oxychloride @0.25 % on crown region as pre monsoon spray	

XXVI. 4 : PEST AND DISEASE IN MAJOR AGRICULTURAL / HORTICULTURAL CROPS

S. No.	Crop	Pest & Disease	Month of incidence	Remedial measures/ Acre	Districts
11	Sugarcane	Early shoot borer	April ,May	Chlorantraniliprole 0.4 % G - 7.5 kg/ Acre Fibronil 5% SC - 600 ml/ acre	Sugarcane grow-ing districts.
		Internode borer	April ,May	Trichogramma chilonis @ 1 cc/ per release /Acre - 6 releases @ 15 days interval	
		Pyrilla	April ,May	Release of Chrysopid @400 egg/acre	
		Root grub	April ,May	Set up light trap to destroy adult Collect and destroy adult beetles Spray Imdiacloprid 17.8 % SL @140 ml/ Acre	
		Smut	July	Set treatment with fungicide	
				carbendazim 1g/lt.	
		sett rot	July	Use resistant varieties	
				Ensure proper drainage and planting in 1 to 2 cm depth	
				Carbendazim 50%-1g/lit	

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S. No.	Crop	Pest	Remedial measures	Districts
1	Brinjal	Shoot and fruit borer	Collection and destruction of infected plant parts like shoot, buds and Fruits	All districts.
			Spray any of the following at 30 days after planting at fortnightly interval	
			1.Quinalphos 25 EC 2ml/Lit+Teepol 1 ml/Lit	
			2.Spray Neem seed kernel Extract 5%	
			Aviod synthetic pyrethroids	
			Grow resistant varieties	
2	Tomato	Fruit Borer	Plant 40 days old marigold as trap crop with 25 days old Tomato sseedlings @1:16 row ratio.	All districts.
			Set up Pheromone traps at 12/Ha	
			Collect and destroy infested fruits, leaves, egg and gregarious larvae.	
			Based on ETL (5% fruit damage) spray quinalphos 2.5 ml/lit (or) Bacillus thuringiensis @2g/lit	
			Release twice Trichogramma chilonis @50,000/Ha release from flowering onwards at 10 days interval.	
			Grow resistant varieties	
3	Bhendi	Sucking pests (Leaf hopper, aphids an white fly)	Grow whitel fly tolerant varieties like Arka Anamika or fruit borer resistant varieities.	All districts.
			Spray Dimethoate 30 EC 2ml/lit or NSKE 5% (50 g/Lit)	
		Fruit Borer	Set up Pheromone traps at 12/Ha	
			Collection and disposal of infested plant parts	
			Release Trichogramma egg parasitoid @1.0 Lakh/Ha	
			Release first instar grubs of Chrysoperla carnea @10,000/Ha	
			Spray Bacillus thuringiensis @2g/lit	
			Based on ETL (5% fruit damage) spray cartap hydrochloride 5.0 sp 2g/lit or cartap hydro chloride 5.0 wp 1g/lit.Combined with NSKE 5%.	

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S. No.	Crop	Pest	Remedial measures	Districts
4	Cucurbits	Pumpkin beetle and Leaf cater pillar	Early planting of pumpkin during October - November	All districts.
			Frequent raking of soil beneath the crop to expose and kill the eggs and grubs.	
			Hand collection and destruction of infested leaves and fruits.	
			Spray malathion 50 EC 1 ml/lit, dimethoate 30 EC 2 ml/lit.	
		Fruit fly	In endemic areas, sowing time to be adjusted in such a way that fruiting does not coincide with monsoon.	All districts.
			Fruit fly resistant pumpkin varieties may be grown.	
			Ribbed gourd may be grown as a trap crop and malathion 2 ml/lit, may be sprayed on the congregating adult flies on the under surface of leaves.	
			Attractants like citronella oil, eucalyptus oil, acetic acid (vinegar),dextrose and lactic acid may be used to trap adult flies.	
			Poison baiting may be employed with saturated sugar solution 5 ml + malathion 50 EC 5 ml + 100 ml fermented palm juice. This mixture may be kept in earthern vessels in many places in the field.	
			Use fishmeal trap to attract and kill the flies.	
5	Moringa	Hairy cater pillar	Burning the congregating caterpillars on the bark with flame thrower / burning flame.	All districts.
6	Mango	Infloresence hoppers, shoot webber	Spray two rounds of acephate 75 SP @ 1 g/lit, phosalone 35 EC @ 1.5ml/lit. First at the time of panicle emergence and the second a fortnight later.	
7	Citrus	Leaf miner	Spray NSKE 5% (50 g/lit), Neem Cake Extract 5% or Neem Oil 3 ml/lit. Spray dimethoate 2 ml/lit.	All districts.
8	Guava	Tea Mosquito Bug	Spray in the early morning hours or late evening hours at 21 day intervals four times minimum. Neem Oil 3%, malathion 1 ml/lit.	All districts.
9	Banana	Rhizome (or) Corm weevil	Trapping the adult weevils by placing chopped pseudostem in the cropped area	All districts.
			Selecting infestation - free suckers	
			Soil incorporation of lindane 1.3 D 20 g/plant, 10-20 g/plant Carbofuran 3G 10 g/plant around pseudostem.	
		Pseudostem weevil	Disposal of infested trees by chopping and burning	
			Maintaining healthy plantation by periodical removal of dry leaves and suckers	
		Banana aphid (Vector of Bunchy top disease)	Spray Imidechlopride 0.5 ml or dimethoate @ 2 ml/lit towards the crown and pseudostem base thrice at 21 day intervals.	

XXVI. 4 : PEST AND DISEASE IN MAJOR CROPS

S. No.	Crop	Pest	Remedial measures	Districts
S.No.	Crop	Diseases	Remedial measures	Districts
1	Chillies	Fruit Rot and Die Back	Use disease free seeds	All districts.
			Seed treatment with Thiram @ 4g/kg	
			Spray Mancozeb @ 2 g/lit or Copper oxychloride @ 2.5 g/lit thrice at 15 days interval starting from noticing the die-back symptoms or at 60 days after planting .	
2	Brinjal	Phomopsis fruit rot	Deep summer ploughing, crop rotation.	All districts.
			Spraying Carbendazim + Mancozeb @ 0.1% or copper oxychloride @2 0.2%.	
		Little leaf of Brinjal	Removal of weed hosts. Spraying of copper hydroxide @ 500 ppm	All districts.
3	Gourds	Downy mildew	Seed treatment with Metalaxyl @ 2 g/kg.seeds Spraying with Mancozeb @ 2g/lit or Metalaxyl + Mancozeb @ 1g/lit.	All districts.
		Powdery mil-dew	Spray Dinocap @1 ml/lit. or Carbendazim @ 0.5 g/lit.	
		Mosaic virus	Removal of weed host.	
			Spray Dimethoate@ 2ml/lit.or Acephate @1g/lit. to control insect vectors.	
			Place yellow sticky traps @ 12/ ha .	