

Pest and Disease Alert – North East Monsoon

In Tamil Nadu, during the North-East Monsoon season, cloudy weather, intermittent drizzling and high relative humidity favour pests, fungal and bacterial diseases. Several pests, foliar and root diseases are expected to attack the crop during the North-East Monsoon season 2026. The management practices are as follows

1. RICE

Yellow stemborer

- Release of the egg parasitoid, *Trichogramma japonicum*, thrice (at weekly intervals from 37 DAT) @ 5 CC/ha each release (when moth activity is noticed in pheromone traps installed at the rate of 12 nos./ha for monitoring purposes)
- Apply *Bacillus thuringiensis* var. *kurstaki* serotype H-3a, 3b, strain Z-52@ 1.50 kg/ha, if damage reaches ETL (10% dead heart in vegetative stage / 2% white ears in reproductive phase)
- Spray any one of the following insecticides (per ha):
 - Acephate 75 % SP 666 - 1000 g
 - Azadirachtin 0.15% EC 1500 - 2500 ml
 - Cartap hydrochloride 50 % SP 1000 g
 - Chlorantraniliprole 18.5% SC 150 ml
 - Fipronil 5% SC 1000-1500 ml
 - Flubendiamide 39.35% SC 50 ml
 - Thiacloprid 21.7% SC 500 ml

Leaf folder

- Release *Trichogramma chilonis* thrice (at weekly intervals from 30 DAT) @ 5 CC /ha each (when moth activity is noticed)
- Spray *Bacillus thuringiensis* var. *kurstaki* 1.50 kg/ha
- Apply *Beauveria bassiana* 1.15 WP 2.5 kg/ha
- If damage reaches ETL (10% leaf damage in vegetative stage / 5% flag leaf damage at flowering phase)
- Spray any one of the following insecticides (per ha):
 - Acephate 75 % SP 666-1000 ml
 - Azadirachtin 0.15% EC 1500 – 2500 ml
 - Cartaphydrochloride 50 % SP 1000 g
 - Chlorantraniliprole 18.5% SC 150 ml
 - Flubendiamide 39.35% SC 50 ml
 - Indoxacarb 15.8% EC 200 ml

Brown Planthopper

- Avoid excessive use of nitrogen
- Control irrigation by intermittent draining
- Set up light traps for the night or yellow pan traps during daytime
- Drain water before using insecticides
- Spray directly at the base of the plants
- Spray any one of the following insecticides (per ha) (If damage exceeds ETL: 1 hopper/ tiller in the absence of predatory spider and 2 hoppers / tiller when spider is present at 1/hill)

(Precaution: Drain water before using insecticides; Spray directly at the base of the plants)

Acetamiprid 20% SP 50-100 g

Azadirachtin 0.15% EC 1500-2500 ml

Neem oil 10 l

Buprofezin 25% SC 800 ml

Clothianidin 50% WDG 20-24 g

Dinotefuran 20% SG 150-200 g

Fenobucarb 50% EC 500-1500 ml

Fipronil 5% SC 1000-1500 ml

Imidacloprid 17.8 SL 100-125 ml

Pymetrozine 50% WG 300g

Thiamethoxam 25% WG 100 g

Blast:

- Wet seed treatment with *Bacillus subtilis* talc formulation @ 10 g / kg of seed.
- Avoid excess application of nitrogenous fertilizers
- Spray *Bacillus subtilis* talc formulation @ 0.5% from 45 days after transplanting at 10 day intervals, three times.
- Spray Azoxystrobin 16.7 % + Tricyclazole 33.3% SC 750 ml (or) Propiconazole 10.7% + Tricyclazole 34.2% SE 500 ml (or) Tricyclazole 500 g per ha in 500 liters of water

Brown spot :

- Seed treatment or soaking of seeds with *Bacillus subtilis* @ 10 g (or) Captan (or) Thiram at 2.0 g / kg of seed
- Dissolve 2.5 kg of *Bacillus subtilis* in 2.5 cm depth of water spread in 25 Sq. m. in the nursery and dip the seedlings required for planting 1ha for 30 minutes and then plant
- Spray Azoxystrobin 16.7 % + Tricyclazole 33.3% SC 300 ml (or) Mancozeb 75%WP at 2.0 g / lit 2 to 3 times at 10 - 15 day intervals

False smut:

- Use of disease free seeds.
- Avoid excess application of nitrogenous fertilizers
- Wet seed treatment with *Bacillus subtilis* at 10 g (or) Carbendazim at 2 g/kg /litre of water can be done.

Prophylactic spraying of fungicides, Propiconazole 500 ml (or) Copper hydroxide 1250 g/ha at just before boot leaf stage

Sheath blight:

- Apply neem cake @ 150 kg/ha to soil
- Foliar spray with neem oil 3% @15 l/ha starting from disease appearance
- Spray Carbendazim 50 WP @ 500 g/ha or Azoxystrobin @ 500 ml/ha or Hexaconazole 75% WG @ 100 mg/l.
- First spray at the time of disease appearance and second spray at 15 days later.

2. MAIZE

Fall Armyworm

- During the rains, spraying of insecticides should be avoided.
- Only after an interval of at least 6 hours after rains, insecticides must be sprayed.
- At 15-20 DAE (days after emergence), spray any one of the following insecticides (If damage exceeds ETL: 10% whorl damage)

- Chlorantraniliprole 18.5 SC @ 150 ml/ha (or) flubendiamide 480 SC @ 250 ml/ha or Broflanilide 125 ml/ha or Pyridalyl 10 EC @ 1000 ml/ha or Eamectin benzoate 1.5% + Profenophos 35% WDG @ 750 ml/ha or
- At 35-40 DAE, spray any one of the following insecticides (per ha)
Spinetoram 11.7 SC @ 250 ml
Eamectin benzoate 5SG @ 250 g
Novaluron 750 ml

3. SORGHUM AND CUMBU

Shoot fly

- Take up early sowing of sorghum immediately after the receipt of the North East monsoon to minimize shoot fly incidence.
- Seed treatment with imidacloprid 48 FS @ 12 ml/ kg of seed or thiamethoxam 30 FS @ 10 ml/ kg of seed
- Set up fish meal traps @ 12/ha till the crop is 30 days old
- Apply any one of the following /ha (If damage exceeds ETL: 1 egg/plant in 10% of plants in the first two weeks of sowing or 10 % dead hearts)
- Apply Carbofuran 3CG 33.3 kg (at the time of sowing)
- Spray Dimethoate 30 EC 1000 ml or Neem seed kernel extract 5% 10 to 15 days after sowing.

Earhead midge and Earhead bug

- The sowing of sorghum should be completed in as short a time as possible to avoid continuous flowering, which favours grain midge multiplication.
- Spray thiamethoxam 25WG @ 200 g/ha or dimethoate 30EC 1650 ml/ha or Neem seed kernel extract 5% on the 3rd and 18th day after panicle emergence [If damage exceeds ETL: 5/earhead (earhead midge); 10/earhead (earhead bug)]

Downy mildew

- Foliar spray with metalaxyl 8% + mancozeb 64% @1kg/ha or mancozeb 75%WP @ 1kg/ha, as recommended, at 20 and 40 days after planting (DAP) or immediately after the appearance of initial symptoms.
- Infected plants should be rogued out and destroyed to reduce disease spread.
- Spray mancozeb 75% WP@ 1 kg/ha; repeat the fungicidal application after 10 days
- Spray talc formulation of *Bacillus subtilis* 2.5kg/ha on 30th and 45th day after sowing.

Ergot or Sugary disease

- Spray mancozeb 75% WP @ 1 kg/ha or propiconazole 25% EC@ 500 ml/ha at 5 - 10% flowering and at 50% flowering stages. Repeat the spray after a week, if necessary.

Head Mould

- Spray mancozeb 75%WP @ 1 kg + aureofunginsol 46.15 SP 100 g/ha in case of intermittent rainfall during earhead emergence; repeat the application, if necessary, a week later

Downy Mildew

- Rogue out infected plants up to 45 days of sowing.
- Seed treatment with *Bacillus subtilis* @ 5 ml/kg followed by spray of metalaxyl 8% +mancozeb 64% WP at 1.25 kg/500 lit on 30th and 45th days after sowing.

Charcoal Rot

Treat the seeds with *Bacillus subtilis* @ 10 g/kg.

CUMBU

Downy Mildew

- Use resistant varieties/hybrids such as CO10 and COH10
- Remove the downy mildew infected plants up to 45 days after sowing
- Follow the recommendations given in sorghum

Rust:

- Spray mancozeb 75% WP @ 1 kg/ha to manage rust

4. PULSES

Pod borers

- Set up pheromone traps for *Helicoverpa armigera* 12/ha
- Set up bird perches 50/ha
- Spray any one of the following insecticides (per ha) (If damage exceeds ETL: 10% of affected pods)
 - Thiodicarb 75% WP 625g
 - Chlorantraniliprole 18.5% SC 150 ml
 - Emamectin benzoate 5% SG 220 g
 - Fluxametamide 10% w/w EC 400 ml
 - Indoxacarb 14.5% SC 350 ml
 - Lufenuron 5.4% EC 600ml
 - Spinosad 45% SC 125 ml
 - Isocycloseram 9.2% W/W Dc (10% W/V) DC 500 ml

Pod bugs

- Collect egg masses of pod bugs and destroy them at the beginning of the infestation.
- Spray any one of the following insecticides (per ha)
 - Dimethoate 30% EC 500ml
 - Flonicamid 50% WG 150 g

Redgram

Root rot and *Fusarium* wilt

- Seed treatment *Trichoderma asperellum* at 4g / kg of seed
- Soil application of *Trichoderma asperellum* or *Bacillus subtilis* @ 2.5 kg / ha with 100 kg of well-decomposed FYM or sand to soil at 30 days after sowing. Spot drench with carbendazim 50%WP @ 1 g/ lit.

Sterility mosaic disease

- Treat the seeds with imidacloprid 600 FS @ 5 g/kg seed along with spraying of fenazaquin 10 EC @ 500 ml/ha at 35 DAS. Rogue out the virus infected plants in the early stages of growth.

Blackgram and Greengram

Root Rot

- Seed treatment with *Trichoderma asperellum* at 4g / kg of seed
- Spot drenching of carbendazim 50WP @ 1 gm/ lit and soil application of *Trichoderma asperellum* – 2.5 kg/ha + 100 kg of well decomposed FYM for the management of root rot in pulses.

Yellow Mosaic

Integrated disease management

- Seed soaking with borax @ 2g/kg +10% notchi leaf extract @ 300 ml/kg for 30

- minutes, followed by seed treatment with imidacloprid 600 FS @ 5 ml/kg of seed
- Soil application of *Bacillus subtilis* @ 2.5 kg/ ha with 100 kg of farm yard manure
- Border row planting of maize (2 rows)
- Rogue out virus infected plants upto 25 DAS
- Install yellow sticky traps @ 12 nos./ha
- Foliar spray of borax @ 0.1% and notchi leaf extract 10% at 30 DAS
- Need based spraying of acetamiprid 20 SP @ 100 kg/ha

Powdery mildew

- Foliar spray with NSKE 5% or neem oil 3% twice at 10 days interval from initial disease symptom appearance.
- On the appearance of the initial symptom, spray carbendazim 50%WP @ 500 g or wettable sulphur 1.5 kg/ha or propiconazole 500 ml/ha

Chickpea (Bengal gram)

Wilt and Root rot:

- Seed treatment with tebuconazole 5.36% FS @ 4 ml/ kg of seeds or carbendazim 25%+ mancozeb 50% WS- 3 g/kg of seed or prochloraz 5.7% + tebuconazole 1.4% w/w ES @ 3 ml/ kg of seed.
- Apply *Trichoderma asperellum* or *Bacillus subtilis* @ 2.5 kg / ha with 100 kg of well decomposed FYM or sand in the field.

Powdery mildew

- Spray NSKE 5% or neem oil 3% twice at 10 days interval from initial disease symptom appearance. At initiation of the disease, spray carbendazim 50%WP @ 500 g or wettable sulphur 1500 g/ha or propiconazole 500 ml/ha

5. SESAME

Shoot & capsule borer, Pod borer (Ekkadayan)

- Spray any one of the following insecticides/ ha (If damage exceeds ETL: 10 larvae/ m² in the vegetative stage and 2 larvae / m² in the reproductive stage)
- Neem seed kernel extract 5% (25 kg NSK to be powdered and soaked overnight and supernatant has to be sprayed mixed in 500 L of water)
- Neem oil (at 2%)10 L
- Chlorantraniliprole 18.5 SC @100 g
- Novaluran 10 EC @ 100 g

Leafhopper

- Spray any one of the following insecticides/ ha
- Neem seed kernel extract 5% (25 kg NSK to be powdered and soaked overnight and supernatant has to be sprayed mixed in 500 L of water)
- Neem oil (at 2%)10 L
- Thiamethoxam 25 WG @ 250 g on 30 DAS and imidacloprid 17.8 SL @ 150 ml on 60 DAS

6. GROUNDNUT

Tobacco Caterpillar

- Grow castor as a border or intercrop in groundnut fields to serve as an indicator or trap crop.
- Collect the egg masses in batches on castor and groundnut foliage and destroy

them.

- Monitor the emergence of adult moths by setting up light traps and pheromone traps.
- Collect gregarious larvae and destroy them as soon as the early symptoms of lace-like leaves appear on castor, cowpea and groundnut.
- Spray Neem seed kernel extract 5% (25 kg NSK to be powdered and soaked overnight and supernatant has to be sprayed mixed in 500 L of water)
- Spray any one of the following insecticides (per ha) (If damage exceeds ETL: 8 egg masses/100m row)
Chlorantraniliprole 18.5 % SC @ 150 ml
Flubendiamide 20 % WG @ 300 g
Isocycloseram 9.2% DC @ 500 ml
Methoxyfenozide 21.8% SC @ 875 ml

Leaf miner (Surulpoochi)

- Grow cumbu as intercrop (6:1) & cowpea as border crop
- Apply neem cake @ 250 kg/ha
- Install light trap at 1/ha
- Install pheromone traps @ 12 /ha
- Spray azadirachtin 1% EC @1000 ml
- Spray any one of the following insecticides (per ha) (If damage exceeds ETL: 1 larva / m row)
Isocycloseram 9.2% DC @ 500 ml
Methoxyfenozide 21.8% SC @ 875 ml
Novaluron 10 EC 2.5 lit /ha twice at 15-day intervals

Leafhopper

- Intercrop lab lab with groundnut at 1:4 ratio
- Seed treatment with thiamethoxam 30 % FS @ 3 ml/kg seed
- Spray any one of the following insecticides (per ha)
Imidacloprid 17.8 % SL @ 100 ml
Isocycloseram 9.2% DC @ 500 ml

Root rot or collar rot:

- Spot drench with carbendazim 50 % WP @ 1g/lit in and around the affected plants.
- Soil application of *Bacillus subtilis* @ 2.5 kg /ha mixed with 100 kg of well decomposed FYM / sand should be done at 30 DAS.

Leaf spot and rust:

- For the management of late leaf spot (tikka leaf spot) and rust diseases spray mancozeb 75 % WP @ 1 kg/ha (or) chlorothalonil 75 % WP @ 1 kg/ha (or) wettable sulphur 80 % WP @ 2.5 kg/ha immediately on the appearance of the symptoms and a second spray after 15 days, if required.

7. CASTOR

Capsule and Shoot borer

- Spray Neem oil 3% (15 L/ha) twice at 15-day intervals to prevent adults from laying eggs. Spray any one of the following insecticides per ha (If damage exceeds ETL: 10% of capsules are damaged)
Indoxacarb 15.8EC @ 500ml
Spinosad 45 SC @75 ml
Thiodicarb 75 WP@ 500g

Chlorantraniliprole 18.5 SC @ 150ml
Emamectin benzoate 5 SG @ 200 g

Castor semilooper

- Apply neem seed kernel extract 5% + neem oil 2%.
Spray azadirachtin 1% @ 1000 ml/ha.
- Spray any one of the following insecticides at fifteen days interval/ ha
Thiodicarb 75 WP @ 500g
Chlorantraniliprole 18.5 SC @ 150 ml
Spinetoram 11.70% SC @ 500 ml
Thiacloprid 21.70% SC @ 500 ml
- Avoid insecticidal sprays if 1-2 Semilooper parasitoid Cocoons per plant are observed.

Tobacco caterpillar

- Collect and destroy the egg masses and caterpillars in the early stages of infestation.
- Plough the field to expose the pupae to predators and parasitoids
- Monitoring the pest with pheromone traps (12/ha) helps in timely treatment
- To control early-stage larvae, spray neem seed kernel extract (NSKE) 5% or chlorpyrifos 20 EC 1.25 L or quinolphos 25 EC L or Azadirachtin 0.03% 2.5 lit/ ha
- As the grown-up larvae move down to the soil to hide during daytime, poison bait (1 lit of 1 kg carbaryl + 10 kg of rice bran+1 kg jaggery+1 L of water to make the bait into pellets for one hectare) placement at the base of the plants helps in killing the larvae.
- Use a light trap to monitor and kill the attracted adult moths
- Set up the sex pheromone trap (12 traps/ha) to monitor the activity of the adults and to synchronize the pesticide application
- Spray NSKE 5 % or azadirachtin 1 % EC (10000 ppm) 1000 ml/ ha or apply *Bacillus thuringiensis* 1000 g/ha during evening hours.
- Spray any one of the following insecticides at fifteen-day intervals, either in the early morning or in the evening/ ha (If damage exceeds ETL: 1-2 egg masses per meter crop row of 7-12 plants)
Spinetoram 11.70 SC @ 500 ml
Thiacloprid 21.70SC @ 500 ml
Thiodicarb 75 WP @ 500g
Chlorantraniliprole 18.5 SC @ 150 ml

8. COTTON

Tobacco caterpillar

- Use a light trap to monitor and kill the attracted adult moths.
- Set up sex pheromone traps at 12 traps/ha to monitor the activity of the adults and to synchronize the pesticide application.
- Grow castor along the border and irrigation bunds as a trap crop.
- Remove and destroy egg masses in castor and cotton crops.
- Remove and destroy early-stage larvae which are found in clusters
- Hand-pick and destroy grown-up caterpillars.
- Spray any one of the following insecticides in the early stage with 500 L and in the mid and late stages with 1000 L spray liquid/ha (If damage exceeds ETL: 8 egg masses / 100m row)

Chlorfenapyr 24% SC 312-425 ml
Diflubenzuron 25% WP 300-350 g
Chlorantraniliprole 18.5%SC 150 ml
Fipronil 5% SC 2000 ml
Spinetoram 11.7 % SC 420-470 ml

Pink Bollworm

- Use pheromone traps to monitor adult moth activity @ 12 traps/ha
- Release egg parasitoid *Trichogrammatoidea bactrae* @ 2.5 cc/ha thrice at 15-day intervals from 45 days after sowing.
- Spray any one of the following insecticides in the early stage with 500 L and in the mid and late stages with 1000 L spray liquid/ha (If damage exceeds ETL: 10% infested reproductive parts)
Emamectin Benzoate 5% SG 190 - 220 g
Chlorantraniliprole 18.5% SC 150 ml
Spinetoram 11.7 % SC 450 ml
Thiodicarb 75% WP 1000 g

Leafhopper

- Treat the seeds with imidacloprid 48% FS at 750g or thiamethoxam 70% FS 430 g for 100 kg of seeds to protect the crop from leafhopper up to 8 weeks.
- Spray any one of the following insecticides in the early stage with 500 L and in mid and late stages with 1000 L spray liquid/ha (If damage exceeds ETL: 50 nymphs or adults / 50 leaves)
Azadirachtin 0.15% EC 2500 - 5000 ml
Acetamiprid 20% SP 50 g
Afidopyropen 50 DC 1000 ml
Broflanilide 20 SC 125 ml
Buprofezin 25% SC 1000ml
Imidacloprid 17.8% SL 100-125 ml
Clothianidin 50% WDG 30 - 40 g
Diafenthiuron 50% WP 600g
Dimpropyridaz 12 SL 900-1000 ml
Dinotefuran 20% SG 150 g

Root rot:

- Spot drenching with carbendazim @ 2 g/l or trifloxystrobin (25%) + tebuconazole (50%) WG @ 0.75g/l at the base of affected plants, as well as surrounding healthy plants or soil application of *Trichoderma asperellum* and *Bacillus subtilis* @ 2.5 kg/ha along with 100 kg well decomposed FYM is recommended.

Leaf spot:

- Foliar application of propiconazole 25% EC @ 1 ml/lit is recommended for the management of leaf spot (*Alternaria*, *Ramularia* and *Cercospora*) diseases at 60, 90 and 120 days.

9. SUGARCANE

Early shoot borer

- Early planting during the main season (December-January).
- Intercropping with green gram, black gram, daincha.
- Trash mulching: 10 – 15 cm thickness on 3 days after planting.
- Earthing up at 45th Day After Planting (DAP).
- Remove dead hearts and destroy.
- Installation of sex pheromone trap @ 50/ ha for mass trapping.

- Spray/apply any one of the following insecticides per ha (If damage exceeds ETL: 15% dead heart)
Chlorantraniliprole 18.5% SC 375 ml
Fipronil 5% SC 1500 ml
Fipronil 0.3% GR 25 kg
- Neem seed kernel extract 5% (25 kg NSK to be powdered and soaked overnight and supernatant has to be sprayed, mixed in 500 L of water)

Internode borer

- Collect and destroy the egg masses periodically
- Detrash at 150 and 210 DAP
- Avoid use of excessive nitrogen fertilizers.
- Propping of crop to avoid lodging of cane.
- Avoid water stagnation.
- Instal sex pheromone trap @ 50/ha for mass trapping of adult male moths.
- Release Egg parasitoid: *Trichogramma chilonis* @ 2.5 CC/ha (6 releases from 4th month to 6th at 15-day intervals).
- During rainy weather and when ants are present, release parasitoids by tying trichocard egg strips in plastic disposable cups and hanging them inverted from the cane top.

Whitefly

- Avoid water stagnation
- Detrash the crop on 150 and 210 DAP.
- Avoid excess use of nitrogenous fertilizers.
- Spray imidacloprid 17.8 SL @ 200ml/ha using high volume sprayer

Crown mealybug and pokkahboeng disease

New plant crop

- Set treatment with propiconazole 25 EC @ 250 ml/ha and imidacloprid 70WS @ 250 ml/ha in 250 lit for 20 minutes followed by foliar spraying of TNAU sugarcane booster @ 2.5, 3.75 and 5 kg/ha on 45, 60 and 75 DAP + Foliar spraying with propiconazole 25 EC @ 500 ml/ha + imidacloprid 17.8 SL @ 200 ml/ha after initial appearance of Crown mealy bug and Pokkahboeng disease symptom.
- Collection and destruction of severely affected shoots.

Ratoon crop

- Foliar spraying of TNAU sugarcane booster @ 2.5, 3.75 and 5 kg/ha on 45, 60 and 75 DAP + foliar spraying of propiconazole 25 EC @ 500 ml/ha + imidacloprid 17.8 SL @ 200 ml/ha after initial appearance of Crown mealy bug and Pokkahboeng symptom and if incidence noticed again foliar spraying of propiconazole 25 EC @ 500 ml/ha + clothianidin 50 WG @ 625 g/ha at 20 days. It is effective up to two ratoons.

Fusarium wilt

- Collection and destruction of severely affected shoots.
- Proper irrigation management.
- Drenching with carbendazim 50 WP @ 1 g per litre in the root zone.

Yellow leaf disease

- Collection and destruction of severely affected shoots.
- Proper irrigation and nutrient management.
- Spraying with imidacloprid 17.8SL @ 200 ml/ha using a high volume sprayer to control the vector.

Smut

- Selection of sets from healthy nursery programme.
- Sett treatment with propiconazole @ 500 ml in 6250 lit /ha for 20 min + Foliar spraying @ 500 ml/ha at 60 and 90 days DAP or Foliar spraying with azoxystrobin 18.2% +difenoconazole 11.4% w/w SC @ 150 ml/ha at 60 and 90 DAP for the management of smut disease.
- Treat the setts with Aerated Steam Therapy(AST) at 50° C for 1 hour or in hot water at 50° C for 30 minutes or at 52° C for 18 minutes.
- Roguing of smut whips with gunny bags/ cloth bag and burning them. Discourage rationing of diseased crops with more than 10 per cent infection.