What are the symptoms of Yellow Stem Borer on rice fields?The insect may start attacking the plants from the nursery stage. The incidence is high from October to January and February. The caterpillar enters the stem and feeds on the growing shoot. As a result the central shoot dries up and produces the characteristic dead heart.The dead tillers can be easily pulled from the base. When they attack at the time offlowering, the earheads become chaffy and and white in colour. Eggs seen in masses of 15-80 covered with buff-coloured hairs on the upper leaf surface. Larva pale yellow with dark brown head. (C.O: Scirpophaga incertulas).

How can Yellow Stem Borer attack on rice fields be managed?Adopt synchronous planting. Cut the leaf-top to reduce carry-over of eggs from the seedbed to the field (Not suit for bacterial leaf blight prone area). Avoid close planting and continuous water stagnation at early stages. Apply the recommended nitrogen in split doses. Set up light traps to monitor the population of moths.Release of egg parasitoid Trichogramma japonicum (5cc /ha) at weekly intervals from 15-30days after transplantation or 25-30 days after sowing or immediately after noticing moth activity. Use sex pheromone for the control of rice stem borer (8 traps /acre). Broadcast of Chlorantraniliprole 0.4 G (4 kg/acre) or Fipronil 0.3 G (5 kg/acre) or Cartap hydrochloride (5 kg/acre) is also recommended.In case of severe attack, spray Cartap hydrochloride 50 SP (2 gram/litre of water) orCarbosulfan 6 G (6.6 kg/acre) or Acephate 75 SP (2 gram/litre of water) or Flubendiamide 39.35 SC (1ml/ 10 litre of water) or Chlorantraniliprole 18.5 SC (3 ml/10 litre of water) or Indoxacarb 15.8 SC (4 ml/ 10 litre of water) or Spinosad 45 SC (2ml/ 10 litre of water) or Quinalphos 25 EC (2 ml/litrer of water). Harvest the crop up to the ground level and destroy the stubbles with plough immediately after the harvest.

What are the symptoms of Brown Plant attack on rice fields Hopper?Nymphs and adults congregate at the base of the plant above the water level and suck the sap from the tillers. The affected plant dries up and gives a scorched appearance called “hopper burn”. Circular patches of drying and lodging of matured plants are typical symptoms caused by this pest. It is the vector of grassy stunt, ragged stunt and wilted stunt diseases. White to brown nymphs and brown or white adults feeding near the base of tillers can be seen. (C.O: Nilaparvata lugens).

How can Brown Plant Hopper attack on rice fields be managed?Avoid very close planting. Provide alleyways after every 3 metre row. Apply nitrogen in split doses. Use resistant varieties such as Jyothi, Bharathi, Aiswarya, Kanakom, Nila, Ponmani, Uma, Sreyas, etc. for cultivation. Drain away water from the field until pest population reduce. BPH is a secondary problem due to insecticide spraying for leaf-feeding insects. Try to avoid early season insecticide application. Install light traps to monitor the pest population. Incorporate additional dose of potash @ 6 kg/acre. Apply urea-neemcake mixture 5:1 ratio (Keep urea mixed with neem cake overnight before application). In case of severe attack, spray Thiamethoxam 25 WG (2gram/ 10 litre of water-safe to BPH predator) or Cartap hydrochloride 50 SP (2gram/litre of water) or Imidacloprid 17.8 SL (3ml/10 of water) or Acetamiprid 20 SP (1.5 gram/10 litre of water) or Buprofezin 25 SC (1.6 ml/litre) or Dinotefuran 20 SG (3-4 gram/10 litre of water) or Carbosulfan 6 G (7 kg/acre) or Carbosulfan 25 EC (2 ml/litre of water) or Clothianidin 50 WDG (0.5 gram/10 litre of water) or Flonicamid 50 WG (3 gram/10 litre of water) or Quinalphos 25 EC (2 ml/litre of water) or Acephate75 SP (2 gram/litre of water).

What are the symptoms of Leaf Folder attack on rice fields?The caterpillar folds the leaves longitudinally and remains inside. It scrapes thegreen tissues of the leaves and makes them white and dry. During severeinfestation the whole field exhibits scorched appearance.Young larvae feeding on the base of the youngest unopened leaves. Presence of fecal matter. Larva is 15-20 mm long, pale green, transparent, actively movingcaterpillar. (C.O: Cnaphalocrocis medinalis).

How can Leaf Folder be managed for rice crops?Shaded conditions and application of excess nitrogen are conducive for leaf folder attack. Use of chemicals during the early crop stages is not advisable. Trim the bunds and remove grassy weeds. Release of Trichogramma chilonis (5 cc/ha) when moth activity is noticed. Set up light traps to monitor the moth population. For eco friendly management spray any one of Chitin based Pseudomonas (10 gram/litre of water) or Bacillus thuringiensis (4 gram/ 10 litre of water) or fish jiggery extract (6 ml/litre of water) or Azadirachtin 1 % (1.5 ml/litre of water). Broadcasting of granular formulations like Chlorantraniliprole 0.4% G (4 kg/acre) and Cartap hydrochloride 4 G (5 kg/acre) is effective. In case of severe attack, spray Cartap hydrochloride 50 SP (2 gram/litre of water) or Indoxacarb 15.8 SC (4 ml/10 litre of water) Quinalphos 25 EC (2ml/ of water) or Acephate 75 SP (2 gram/litre of water) or Flubendiamide 39.35 SC (1ml/10 litre of water) or Chlorantraniliprole 18.5 SC (3 ml/10 lit of water). Opening the folded leaves using a thorny twig before the spray will be beneficial.

What are the symptoms of Rice Bug attack on fields?The attack of rice bug is seen in the milky stage. They suck the sap from grains. The attacked grains show brownish discoloured patches on the husk. Some grains or ear heads appear chaffy. The panicles will be seen standing erect because of low weight. Bugs can be seen flying about when disturbed. The bug also emits a particular buggy odour. Brownish green adults are slender with long legs and antennae. ETL: 5 bugs/100 panicles or 1 bug/hill - flowering stage; 16 bugs/100 panicles or 3 bug/ hill at milky stage. (C.O: Leptocorisa acuta).

How can Rice Bug be managed?Keep the field and bunds free of weeds and grasses. Avoid overlapping cultivation in an area. Put attractants such as arasan or anything with an odor like dead snails or rats. Spray fish jaggery extract (20 ml/ litre of water). Spray chitin based Pseudomonas flurescens (2.5 kg/ha). Use neem seed kernel extract (50 gram/litre of water) or notchi leaf extract (100 gram/litre of water) or Ipomoea leaf powder extract (100 gram/litre of water) or Prosopis leaf powder extract (100 gram/litre of water). Spray Azadirchtin 3000 ppm (10 ml/ litre of water) or Malathion 50 EC (2 ml/ litre of water). Ensure the time of spray either before 9 a.m. or after 3 p.m. Spraying should be spiral manner, beginning at the field bunds and progressing towards the field centre

How can Gall Midge attack on rice crops be managed?Use tolerant varieties like Pavithra, Panchami, Sreyas and Uma. Avoid late transplantation during the first crop season. Use

optimum seed rate. Destroycollateral hosts like wild rice, Cynodon dactylon, Ischaemum aristatum, Echinochloa spp. and Isachne sp. Dip germinated seed in Chlorpyrifos 20 EC (10 ml/litre of water) solution for 3 hours before sowing.Dip root of seedlings in Chlorpyrifos 20 EC (1ml/litre of water) suspension for 12 hours prior to planting. In case of serious infestation, spray Thiamethoxam 25 WG (2gram/10 litre of water) or Quinalphos 25 EC (2 ml/ litre of water) or Fipronil 5 SC (3ml/litre of water). Alternatively, apply granules of Quinalphos 5G (25 Kg /ha) or Chlorpyriphos 10 G (5 kg /ha) within 10 days after sowing.Broadcast in 2-3 cm of water and maintain water for 4 days.

What are the symptoms of Ants and Termite Attacks in rice crops?Damage is seen mainly in upland rice. The ants eat the seeds and affect thegermination. Missing plants and loss of crop stand is noticed in the field. The damage is noticed in certain patches. Cream coloured, tiny insects resembling ants with dark coloured head can be seen. (C.O: Odontotermes obesus).

How can Ants and Termites be managed for rice crops?Increase the seed rate to overcome the damage caused by ants. Drench the affected areas with Chlorpyriphos 20 EC (1 ml / litre of water). Irrigate the field if water is available

What are the symptoms of Army Worms on rice crops?It appears in the field sporadically and cyclically in large swarms and feed on crops gregariously. Young caterpillars cause the damage by eating the soft leaves of the rice plant. Full-grown caterpillars devour the entire plant leaving the plant as mere stumps. Presence of pearly white and round eggs or brownish black larvae feeding on rice. (C.O: Spodoptera mauritia).

How can Army Worm attach on rice crops be managed?The pest is seen in dry fields. Letting in water can effectively control the pest.Grassy weed serve as an alternative host for army worm. So cleaning of bunds is very much important. In severe case spray Dichlorovos 76 EC (1 ml/litre of water) during late evening.

What are the symptoms of Case-Worm attack to rice crops?The larvae cut the leaf tips and form tubes. The larvae scrape the leaves remaining inside the tubular leaf cases causing white patches. Such leaf cases can be seen hanging on the under side of the leaves orfloating in water.The attack normally happens in early transplanted stage and under conditions of water logging and shade. Severely affected field have a whitish appearance. Young pale green larvae. (C.O: Nymphula depunctalis).

How can Case Worm attack on rice crops be managed?Drain water from the field for three days. Application of Kerosene (1 litre) mixed with saw dust (25 Kg) for one acre. Spray Chitin based Pseudomonas @2.5 kg/ha or Azadirachtin 1 % (750 ml/ha). In severe case spray Dichlorovos 76 EC (1 ml/litre of water) or Phenthoate 50 EC (2 ml/litre of water).

#What are the symptoms of Rice Thrips?Both nymphs and adults lacerate the tender leaves and suck the plant sap. This cause yellow or silvery streak on the leaves of young seedlings. Terminal rolling and drying of leaves from tip to base is the typical symptom of attack. It causes

damage both in nursery and main field. Yellow larvae and dark brown adults. (C.O: Stenchaetothrips biformis).

#How can Rice Thrips be managed?Flooding to submerge the infested field for two days is very effective. In case of severe infestation, spray Dimethoate 30 EC (1.5 ml/litre of water).

#What are the symptoms of Mealy Bug attach on rice crops?Large number of insects remains in leaf sheath and suck the sap. This causes yellowing of plants in circular patches. Plants become weak, yellowish and stunted. Presence of white waxy fluff in leaf sheath is a typical symptom of damage. The mealy bug is small reddish white, soft-bodied, wingless insect covered with filamentous materials. (C.O: Brevennia rehi).

#How can Mealy Bug be managed?Parasitoids such as Adelencyrtus sp., Xanthoencyrtus sp. and Dolichoceros sp. and coccinellid predators can be utilized. Remove the grasses and trim the bunds during the main field preparation before transplanting. Remove and destroy the affected plants. In case of severe attack spray Dimethoate 30 EC (1.5 ml/litre of water).

#What are the symptoms of Blue Beetle attack on rice crops?The grubs are surface feeders and they scrap the green matters of the leaves. The adult also, feed upon the leaves but the serious damage is caused by the grubs. The affected leaf become membranous and dries up soon. It is primarily the pest of seedlings. The adults are small, metallic blue beetles with a series of black dots on the elytra.

#How can Blue Beetle be managed?Spray Beauveria bassiana1.Spray Beauveria bassiana (10 gram/litre of water)

What is the recommended insecticide for severe Yellow Stem Borer attack?In case of severe attack,spray Cartap hydrochloride 50 SP (2 gram/litre of water) or Indoxacarb 15.8 SC (4 ml/10 litre of water) Quinalphos 25 EC (2ml/ of water) or Acephate 75 SP (2 gram/litre of water) or Flubendiamide 39.35 SC (1ml/10 litre of water) or Chlorantraniliprole 18.5 SC (3 ml/10 lit of water). Opening the folded leaves using a thorny twig before the spray will be beneficial.

What is the recommended insecticide for severe Brown Plant Hopper attack?In case of severe attack, spray Thiamethoxam 25 WG (2gram/ 10 litre of water-safe to BPH predator) or Cartap hydrochloride 50 SP (2gram/litre of water) or Imidacloprid 17.8 SL (3ml/10 of water) or Acetamiprid 20 SP (1.5 gram/10 litre of water) or Buprofezin 25 SC (1.6 ml/litre) or Dinotefuran 20 SG (3-4 gram/10 litre of water) or Carbosulfan 6 G (7 kg/acre) or Carbosulfan 25 EC (2 ml/litre of water) or Clothianidin 50 WDG (0.5 gram/10 litre of water) or Flonicamid 50 WG (3 gram/10 litre of water) or Quinalphos 25 EC (2 ml/litre of water) or Acephate75 SP (2 gram/litre of water).

Explain The symptoms and management of Blue beetle for rice crops?Blue beetle Symptom

The grubs are surface feeders and they scrap the green matters of the leaves.The adult also, feed upon the leaves but the serious damage is caused by the grubs. The affected leaf become membranous and dries up soon. It is primarily the pest of seedlings. The adults are small, metallic blue beetles with a series of black dots on the elytra. (C.O: Leptispa pygmaea). Management Spray Beauveria bassiana (10 gram/litre of water)

Explain The symptoms and management of Case worm for rice crops?Case worm
Symptom: The larvae cut the leaf tips and form tubes. The larvae scrape the leaves remaining inside the tubular leaf cases causing white patches. Such leaf cases can be seen hanging on the under side of the leaves orfloating in water. The attack normally happens in early transplanted stage and under conditions of water logging and shade. Severely affected field have a whitish appearance. Young pale green larvae. (C.O: Nymphula depunctalis). Management: Drain water from the field for three days. Application of Kerosene (1 litre) mixed with saw dust (25 Kg) for one acre. Spray Chitin based Pseudomonas @2.5 kg/ha or Azadirachtin 1 % (750 ml/ha). In severe case spray Dichlorovos 76 EC (1 ml/litre of water) or Phenthoate 50 EC (2 ml/litre of water).

Explain The symptoms and management of Gall Midge for rice crops?Gall Midge
Symptom:The attack results in formation of a hollow cavity or tubular gall like onion leaf at the base of the infested tiller. Gall is a silvery white hollow tube, 1 cm wide and 10-30 cm long (silver shoot).Affected tiller inhibits growth of leaves and fails to produce panicles. Deformed, wilted, and rolled leaf. Adults are orange coloured mosquito like fly. (C.O: Orseolia oryzae).
Management:Use tolerant varieties like Pavithra, Panchami, Sreyas and Uma. Avoid late transplantation during the first crop season. Use optimum seed rate. Destroy collateral hosts like wild rice, Cynodon dactylon, Ischaemum aristatum, Echinochloa spp. and Isachne sp. Dip germinated seed in Chlorpyrifos 20 EC (10ml/litre of water) solution for 3 hours before sowing. Dip root of seedlings in Chlorpyrifos 20 EC (1ml/litre of water) suspension for 12 hours prior to planting. In case of serious infestation, spray Thiamethoxam 25 WG (2gram/10 litre of water) or Quinalphos 25 EC (2 ml/ litre of water) or Fipronil 5 SC (3ml/litre of water). Alternatively, apply granules of Quinalphos 5G (25 Kg /ha) or Chlorpyriphos 10 G (5 kg /ha) within 10 days after sowing. Broadcast in 2-3 cm of water and maintain water for 4 days.

What is the recommended insecticide for severe Yellow Stem Borer attack?spray Cartap hydrochloride 50 SP (2 gram/litre of water) or
Carbosulfan 6 G (6.6 kg/acre) or Acephate 75 SP (2 gram/litre of water) or Flubendiamide 39.35 SC (1ml/ 10 litre of water) or Chlorantraniliprole 18.5 SC (3 ml/10 litre of water) or Indoxacarb 15.8 SC (4 ml/ 10 litre of water) or Spinosad 45 SC (2ml/ 10 litre of water) or Quinalphos 25 EC (2 ml/litrer of water). Harvest the crop up to the ground level and destroy the stubbles with plough immediately after the harvest.

Explain The symptoms and management of Brown leaf spot for rice crops?Brown leaf spot
Symptom:The main symptom of the disease is spots on foliage. On the leaves dark brown coloured small spots of oval or oblong shape surrounded by yellow halo are formed. When

infection is severe, the lesions may coalesce, killing large areas of affected leaves.Infected grains will show black discoloration and reduces the grain quality and weight. It results in failure of seed germination and seedling mortality. The fungus is seed-borne. (C.O: Helminthosporium oryzae or Drechslera oryzae).
Management:Use certified and healthy seeds. Kanchana, Remya, IR-36 etc. are resistant varieties. Treat seeds with hot water (53-54°C) for 10-12 minutes. Soaking the seed in Carbendazim 50 WP (2 gram / kg of seed) for 12 to 16 hours before sowing.
Spray Mancozeb 75 WP (3 gram/litre of water) or Propineb 50 WP (2.5 gram/litre of water) or Carbendazim + Mancozeb 75 WP (2 gram/litre of water) or Hexaconazole (1 ml / litre of water) on rotation in the field as and when the disease is noticed.

How to manage Blast disease on rice fields ?Use certified and healthy seeds. Kanchana, Makom, Onam, Swarnaprabha, Athira, Aiswarya, Jaya, IR-8 etc. are resistant varieties. Remove and destory the weed hosts in the field bunds and channels. Seed treatment with Pseudomonas fluorescens 10 g/ kg seed for 12 hrs.Soak seed for 12 to 16 hours in Carbendazim 50 WP (2 gram / kg of seed per litre of water). Avoid excess use of nitrogenous fertilizers. Seed treatment with Pseudomonas fluorescens (20 gram/litre of water for 1 kg of seed) and prophylatic spraying of Pseudomonas fluorescens (20 gram/litre of water) is effective in preventing the incidence of the disease.Spray Carbendazim 50 WP (1 gram/litre of water) or Carpropramid 27.8 SE (1 ml / litre of water) or Isoprothiolane 40 EC (1 ml / litre of water) or Hexaconazole (1 ml / litre of water) or Tebuconazole 250 EC (1.5 ml / litre of water) or Trifloxystrobin + Tebuconazole 75 WG (0.5 gram/litre of water) on rotation as and when the disease is noticed.

What are the symptoms of Blast disease on rice fields?The fungus attacks the crop at all stages of crop growth. Symptoms appear on leaves, nodes, rachis and glumes. On the leaves, the lesions appear as small bluish green flecks, which enlarge under moist weather to form the characteristic spindle shaped spots with grey centre and dark brown margin (Leaf blast). The spots coalesce as the disease progresses and large areas of the leaves dry up and wither. Spots also appear on sheath. Severely infected nursery and field appear as burnt. Black lesions appear on nodes girdling them. The affected nodes may break up and all the plant parts above the infected nodes may die (node blast).During flower emergence, the fungus attacks the peduncle and the lesion turns to brownish-black which is referred to as rotten neck / neck rot / panicle blast (neck blast). In early neck infection, grain filling does not occur while in late infection, partial grain filling occurs.Small brown to black spots may also be observed on glumes of the heavily infected panicles. The pathogen causes yield losses ranging from 30-61 per cent depending upon the stages of infection. (C.O: Pyricularia oryzae).

How to manage Bacterial leaf blight on rice fields ?Use disease free seeds. Treat seeds in Agrimycin or Streptocycline 100-250 ppm (2.5 gram / 10 litre of water for 10 kg of seed) for 12 hours followed by hot water treatment at 52 degree Celcius for 30 minute. Seed treatment with Pseudomonas fluorescens (20 gram/litre of water for 1 kg of seed), seedling dipping in and prophylatic spraying of Pseudomonas fluorescens (20 gram/litre of water) is effective in preventing the incidence of the disease.Remove and destroy weed hosts. Avoid clipping the tip of seedling during transplanting. Go for optimum spacing. Avoid overuse of nitrogenous

fertilizers. Spray fresh cowdung extract (20 gram fresh cowdung) in one litre of water and allow to settle. Use the supernatant liquid for spraying).Apply bleaching powder @ 20 bags of 100 gram each for one acre in the irrigation water for checking the spread of the disease. Spray antibiotics viz. Streptocycline - (15 gram/ 300 litre of water/ha) or Streptomycin sulphate + Tetracycline hydrochloride (Agrimycin 100 or Plantomycin (750 gram/ 500 litre of water/ ha) in severe cases.

What are the symptoms of Bacterial leaf blight on rice fields?The disease is usually noticed at the time of heading but it can also occur in seedlings in the nursery which show circular, yellow spots in the margin, which enlarge, coalesce leading to drying of foliage. “Kresek” symptom is seen in seedlings, 1-2 weeks after transplanting.The bacteria enter through the cut wounds in the leaf tips or margin, become systemic, cause water soaked grayish green symptoms on leaves which fold up and roll along the midrib, and cause death of entire seedling. In grown up plants water soaked, translucent lesions appear near the leaf margin. The lesions enlarge both in length and width with a wavy margin and turn straw yellow within a few days, covering the entire leaf.As the disease advances, the lesions cover the entire lamina which turns white or straw coloured. Milky or opaque dew drops containing bacterial masses are formed on young lesions in the early morning. They dry up on the surface leaving a white encrustation. The affected grains have discoloured spots. If the cut end of affected leaf is dipped in water, it becomes turbid because of bacterial ooze. (C.O: Xanthomonas oryzae pv. oryzae).