

Pest of Field Crops & Stored Grain

COCONUT (Plantation Crops)

Pest
bot name
family
order

host range
Damage
Symptoms

Bionomics

Management

Scarabaeidae
 Coleoptera
 areacunt
 pineapple
 sugarcane
 date palm
 oil palm
 sago
 Palmyra

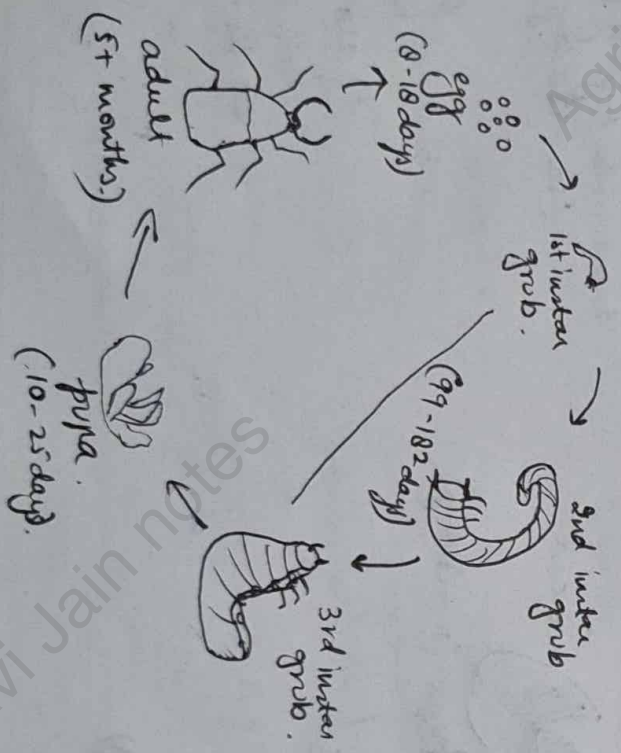
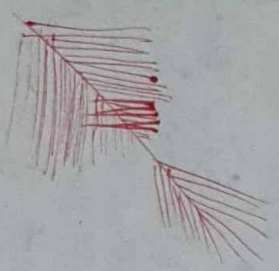
1) central spindle appears cut or topped
 2) fully opened fronds show diamond shape cuttings
 3) Holes with chewed fibre sticking at the base of central spindle.

1) Egg - 140 oval creamy white eggs in mature pits or vegetable decaying material at dept of 5-15cm
 2) grub - stout, bluish, white, feed on decaying matter.
 3) Pupa - grubs pupates in earthen cells at 0.3 to 1m & emerge as adult in 10-25 days
 4) Adult - stout, black, long horn projecting dorsally from head in male. Horn is short in female.

1) Avoid manure pits
 2) destroy all dead areas
 3) Remove fronds at 1/1 ha.
 4) Encourage reduviid predators, *Pteryneis laevicollis*
 5) Crown may be properly stored during harvest and adults looked at from wire mesh/clothene balls @ 3/m². in insectment 3 leaf axils in 45 days
 6) Incorporate *Clerodendron infornatum* whole plant in breeding sites.

Distribution & status

widely distributed throughout coconut growing areas.
 Regular pest of coconut.



Pest bot name family order host range

② Red Palm Weevil Rhynchophorus ferrugineus Curculionidae Coleoptera

Damage symptoms

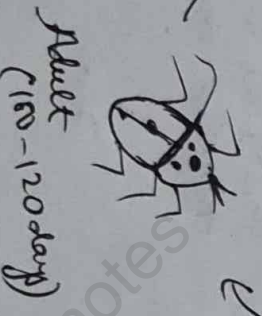
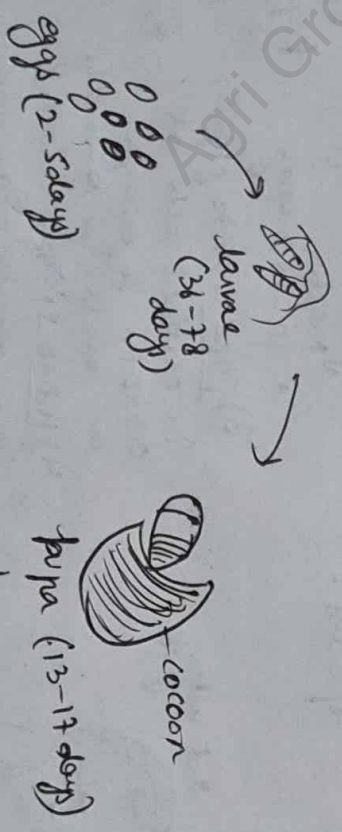
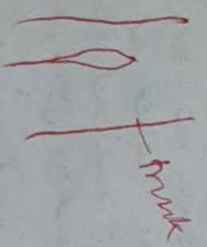
1) holes on trunk with brown sore
 2) yellowing of leaves
 3) gradual withering of central shoot in crown.

Bionomics

1) Egg - 276 oval, white eggs in scraped out small canies on yellow of upto 7 yrs. (4-5 days)
 2) grub - Apodous light yellow with red head (36-78 days)
 3) pupa - fibrous cocoon inside trunk.

Management

1) Avoid cutting green branches
 2) Avoid injury on trunks
 3) Injury should be protected with clay or cemented with copper oxychloride @ 11ka.
 4) Phumane traps
 5) Sweet 1-2 aluminium phosphate tablets inside tunnels & plug holes
 6) Sweet feeding with clay.
 7) Root feeding @ low + low water should be done after harvest of wts.
 8) Root feeding using mud pad with 50 Kilo/L or 2.5 L.



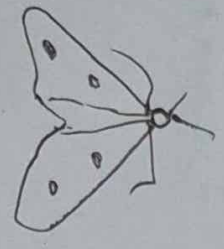
Adult (100-120 days)

1) 100-120 days
 2) 34-78 days
 3) 13-17 days
 4) cocoon

1) 50 grubs can be found feeding on the soft tissues inside trunk.
 2) grub pupates in fibrous cocoon inside trunk.
 3) adult - Reddish brown with 6 dark spots on thorax.
 4) Male has conspicuous long tuft of hairs.
 5) Root feeding @ low + low water should be done after harvest of wts.
 6) Root feeding using mud pad with 50 Kilo/L or 2.5 L.

BRINJAL

Post
As shoot & fruit bore
bot. name
Leucinodes orbonalis
family
Pyraustidae
order
Lepidoptera



Post
Damage
symptoms
 • bival
 • potato
 • pea
 • solanaceae family
 1) Larva bore into tender shoots & cause withering of terminal shoots / dead hearts
 2) bore into fruits of leaves, buds, cause withering of leaves
 3) shedding of buds
 4) waste fruit wither & can wither.
 5) attacked fruits are with bore holes plugged with excreta.

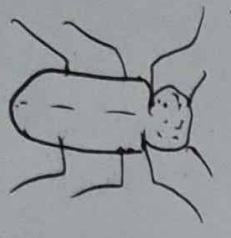
Prevalence

1) Egg - 3-4 days.
 150-350 creamy white eggs laid singly on leaves, tender shoots, flowers & developing fruits
 2) Larvae - stout, pink, grey hair on waste brown head (15 days) - 5 instars.
 3) Pupa - 6-8 days in tough grey cocoon (boat shaped cocoon)
 4) Adult - white wings, triangular brown markings on fore wings.

Management

1) Release egg parasitoid Trichogramma chilonis @ 1 lakh/ha.
 2) collect & destroy damaged shoots / fruit
 3) Avoid cutwounds
 4) Carbaaryl 500P + neem oil 1:5:1.

② Ash weevil
Mydoceus discolor
Coloptera
Cucurbitaridae



1) Notching of leaf margin by adults
 2) grubs feed on roots
 3) withering & death of plants.

Total life cycle - 17-50 days

1) Eggs - 500 eggs in soil. - 6-7 days.
 2) Grub - 30-45 days.
 3) Pupa - pupates in soil in earthen cocoons.
 4) Adult - 10-12 days. Brown & white spots.
 1) collect & destroy adult weevils
 2) Apply lindane 1.3% before planting @ 25 kg/ha.
 3) spray Endosulfan 35 EC 1.5 l

Pent
bot name
family
order

host range
Damage symp

Bionomics

Management

③ Nodda
 beetle
 spotted beetle

Kenosepilachna
implicata

Coleoptera
Coccinellidae

• brinjol
 • potato
 • tomato
 • cucumber

1) Both adult & grub scrap the lower epidermis of leaves leaving behind stripes of uneaten areas

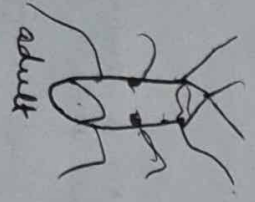
1) Egg → 2-4 days
 eggs shaped, in clusters on lower surface, yellow, 120-460 eggs/female

1) Carbaryl 50% WP 2kg + wettable sulphur 2kg
 2) Endosulfan 35 EC 1.5 l
 3) collect & destroy



④ Brown leaf hopper

Cercus
physalis
Cicadellidae
Hemiptera



1) 5th leaf leaves
 2) skeletonization of leaves
 4) plant wither

3) legs - 5-6 days yellow with stripes on posterior part

4) Adult - copious colored 6 spots/elytra

TOMATO

① Pest bot. name family order host range

fruit borer *Helioverpa armigera* Noctuidae Lepidoptera

Bionomics

Management

- 1) Resistant cultivars like BT1, T 32, T 27, Pujab kearsi etc
- 2) collect & destroy the infested fruits & grow up larvae.
- 3) grow simultaneously 40 days old African tall heighted & 25 days old tomato seedling at 1:10 rows to attract *Helioverpa* adults for laying eggs.

② serpentine leaf miner Linomyza trifolii Agromyzidae Diptera

- 1) maggot mines into leaves & cause serpentine mines
- 2) digging & dropping of leaves.



- 1) Egg - 2-4 days. female thrust eggs into the epidermal layer of leaves.
- 2) Larvae - 7-10 days. minute orange yellow apodous maggot.
- 3) Pupa - 5-7 days. larva pupates within mines.
- 4) Adult - pale yellow color.

- 1) Collect & destroy mined leaves
- 2) spray NSE 5%.
- 3) NPV spray
- 4) Carbaryl 500P 1kg.
- 5) Phosalone trap culture 15/ha.
- 6) Release *T. chilonis* 6000 @ 50,000/ha

Pest bot name family order

③ Whitefly Bemisia tabaci Aleyrodidae Homoptera

vector of leaf curl virus.
distribution - India, Sri Lanka, Congo, Japan, Europe.



adult

host range

- cotton
- tomato
- tobacco
- melon
- brinjal
- cabbage
- sweet potato

Damage symptoms

- 1) nymph & adult suck sap from under surface of leaves
- 2) premature defoliation
- 3) sooty mould development
- 4) shedding of buds & bolls
- 5) poor boll quality
- 6) polyphagous insect & have biotype

Bemisia

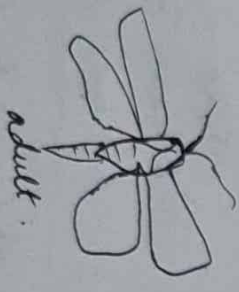
- 1) Eggs - 3 days on leaves
- 2) nymph - green-yellow, oval along with purplish or under surface of leaf (5-33 days) summer (17-73 days) winter
- 3) Adult - minute with yellow body covered with white waxy bloom.

Management

- 1) Spray ethion 50 EC 1.5L/2kg.
- 2) Spray NISKE 5% & neem oil
- 3) Thruly spraying inside spacing
- 4) crop rotation as in maize, sorghum, etc
- 5) remove & destroy infested leaf
- 6) Remove & destruction of egg masses
- 7) NPV in evening.
- 8) cabbage 50% w/c 1.25 kg & water 2.5L (poison bait)
- 9) Use light trap.

④ leaf eating caterpillar Spodoptera litura Noctuidae Lepidoptera

Tobacco cutworm
distribution China, Pakistan, India, Sri Lanka, Korea, Japan, Andromeda, Bangladesh.



adult

- citrus
- cotton
- castor
- cabbage
- tomato
- chili
- sweet potato
- soybean
- mullu
- rice
- etc.

- 1) skeleton of veins by egg masses
- 2) skeletonized leaf dies up
- 3) larvae feed by making holes
- 4) They bore into squares, leaves, flower, bolls & feed in internal contact cause shedding of bolls. → in early morning or night.

- 1) larvae - pale green with dark markings (13 days)
- 2) Adult - moth with waxy white markings on a brown forewing (10 days)
- 3) Egg - egg mass laid by scraping the epidermal layer, leaving skeleton of veins (4-12 days)

CHILLI

Pest
Host name Family Order Host range

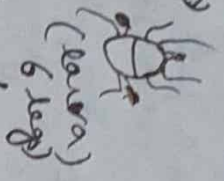
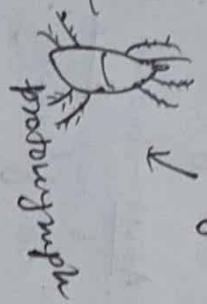
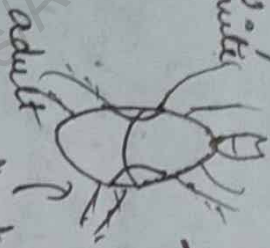
Polypogonatorum
larva
Araucaria

Damage
Symptom

Bionomics

Management

① Mirraoui with broad warty yellow warts



~~Tarsonemidae~~
 Tarsonemidae



② Chilli thrips Scirtothrips dorsalis Thripidae Thysanoptera

• Tea
 • grapes
 • Tomato
 • cotton

- 1) Sudden curling & crinkling of leaves followed by blister features.
- 2) followed by blister features.
- 3) Jothole becomes elongated *called as* ~~Ret tail~~ symptom.
- 4) Later they stop growing & die.

- 1) Egg - minute & oval laid on ventral surface of young leaves or on leaf buds. (1.5-2 days)
- 2) Larva - 3 pairs of legs, moves sluggishly 1.5 days
- 3) Adult - 0.1mm in length
 ↳ 4 pairs of legs
 ↳ yellow-green & translucent ~~color~~ (8-10 days)
- 3) nymph → 1 day.

- 1) nymphs & adults are tiny, slender, fragile & yellowish color
- 2) reproduce sexually & asexually.
- 3) egg - insect bite veins (40-48 eggs)
- 4) life cycle → 10-20 days.
- 1) Karisat variety K2, G5, K235
- 2) do not grow chili after sowing
- 3) do not follow rain & chili as wired crop
- 4) Inter crop with green manure crop

Sesbania grandiflora regulate thrip population to provide shade & regulate thrip population

③ Spray ethion 50 EC 1.5-2.0L
 Dip seed seedling in Monocrotophos 36 wsc @ 0.05% for 20 min.

pest
Fruit
borer
Helicoverpa armigera

bot name

family
Noctuidae

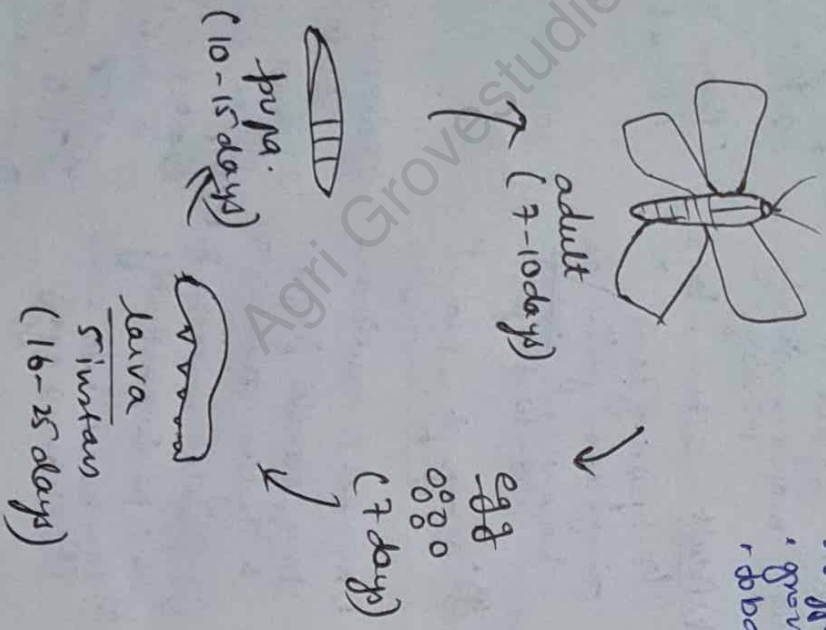
order
Lepidoptera

host range
maize
tomato
sorghum
lablab
pea
sunflower
soybean
groundnut
tobacco

Damage
syrup
Feed on leaves,
flowers & bolls

Bioassay

Management



- 1) feed on leaves, flowers & bolls
- 2) feed internal content completely by thrashing their head inside leaving rest of the body outside.
- 3) damaged squares, bolls drop away from plants.
- 4) developed & open bolls are not attacked.

- 1) Egg - 7 days, singly laid.
- 2) Larva - fully grown in 2" long.
 - green in dark brown grey lines
 - dark & pale bands (14 days)
- 3) Pupa - 10 days in soil for 10 days
- 4) Adult - brown with V-shaped mark on forewing. dull black border in hind wing.

- 1) Avoid monocropping
- 2) Application of nuclear polyhedrosis virus (NPV) in evening at 7m & 12 o'clock after setting.
- 3) resistant varieties like L12, L15, L13, etc.

1) spray
Fiprothi 5 SC
RD - 1500 ml.

Test of Mango

Pest
Nauplo hopper
Edioscopus
viveosporus
Botswana
Cecadellidae
Neuroptera

host range
 mango
Damage & symptoms
 • nymph & adult suck sap from tender shoots causing withering & shedding of flower buds, shoots & leaves
 • hoppers produce honey dew encourages growth of black sooty mould.

Bionomics
 1) Eggs - singly laid in the tissues of young leaves, shoot, flower stalk.
 4-7 days.
 2) nymph - 8-13 days 5 instars.

Management
 1) Avoid close planting
 2) Monocotophes 3 & 6 SL 2.5 - 3.34.
 3) Avoid excess N fertilization
 4) Rearing of disease carrying

② Mango leaf webber
Orthaga
exvinacea
 Noctuidae
 Lepidoptera

host range
 mango
Damage & symptoms
 • larval webber leaves into clusters & feed within.
 • leaves soggy, scathed, wither and dry up

1) Egg - 4 days - 30-50 yellow-green eggs singly bear leaf veins.
 2) Larva - pale green with brown head
 3) Pupa - in leaf web (11-14 days)
 4) Adult - grey, brown wings, wingless lives on forewings.

1) Remove & destroy webbed leaf along with larvae & pupa
 2) Carbaryl 50 WP 2g
 3) Consume predators like → Carabid beetle
 4) Parasitoid → *Homocidus*.

③ fruit fly
Bactrocera
dorsalis
 Tephritidae
 Diptera

Damage & symptoms
 • mango, guava, peach, pear, citrus, banana, coffee etc.
 • maggot destroys & convert pulp into small, discoloured, semi-liquid mass, unfit for consumption.

1) Egg - 200 eggs/mango. in clusters of 2-15 beneath skin of ripening fruits. 22-23 days.
 2) Maggot - feeds on pulp & become full grown 7 days.
 3) Pupa - 3-7 inch below soil
 4) Adult - brown with negative wings and yellow legs.

(1) Rns interspersed through to expose & kill soil borne pyraea
 (2) Bait spray of Malathion with jaggery before ripening.
 (3) Male sterilization technique -

• fruit drop
 • liquid core come out
 • preening fruit

1) Adult - brown with negative wings and yellow legs.

1) Adult - brown with negative wings and yellow legs.

Pest Borers family order

④ Spem Borers Cerambycidae Coleoptera

boer. xylocopa

⑤ Mangro Drosicla Pseudococcidae Hemiptera

weevil bug mangro weevil

host crops

mango
apple
orange
citrus
silk cotton

Damage symptom

• grubs feed by tunnelling the bark & main stem & main stem

• shedding of leaves & drying of terminal shoots

• damage to main stem causes tree death

• caused by ~~weevil~~ mangro weevil adult female

• infest leaves & inflorescence

• nymph climb up the inflorescence together & suck juice from young shoots, panicles, pedicels.

• plant drop up

• yield reduced.

Bionomics

1) Eggs - laid singly on bark or cracks or tree trunk or branches 1-2 weeks.

2) Grub - yellow (6 months)

3) Pupa - 19-36 days.

4) Adult - grey with pink dots and lateral spine on the thorax (6 months)

1) Egg - oval, shiny pink in soil upto 15cm for 22-47 days (April-May) eggs hatching starts at the end of December & continues upto month

2) Nymph - 3 instars

3) Adult - oval, flat, body covered with white waxy powder. Generally water → 1 pair of black wings and are crimson red.

Management

(1) tolerant varieties - Neelum, Kumbharia.

(2) Avoid injury at base of trunk during pruning

(3) During off-season apply absorbent cotton soaked in 10% mercuriophos 360SC.

(1) Release Australian ladybird beetle @ 10/ tree

(2) Remove aphids

(3) Remove weevils in June-July.

CITRUS

Pest Bot. name

① Shoot Diaphorina
Psyllid citi

Family order

Psyllidae Hemiptera

Host range

• citrus,
• deciduous
• plants
• Rutaceae
family

Damage symptoms

• both nymph & adult suck sap from leaves
• curl up; dry and fall off.

Remarks

1) Egg - 200 eggs singly or under side of leaf young leaves 7-10 days.

2) nymph - pale yellow, purple eye, 25-31 days

3) Pupa - broad, oval, pale yellow with orange, yellow band in the middle of body

4) Adult - long wings body covered with white waxy powder.

Management

(1) Rows affected near & dry shoots
(2) Monocotyledonous
(3) ensure normal

parasitoid → Tetrastichus radiatus

② Citrus Neurocaulus
Beetle oxylinus

Family order

Aegrodidae Hemiptera

• mango
• guava
• plum.

• nymph & adult suck plant sap

• causing curling of leaves

• premature fall of flower buds & fruits

1) Egg - spirally laid yellow-brown oval eggs 7-14 days

2) nymph - shiny black, scale like, bedded by white fringe of wax 30-60 days

3) Pupa - oval, black long black spines, arched dorsum, black teeth

4) Adult - dark orange with smoky wings

- fore wings → white area of irregular shape

(1) close pruning, water logging, or stress condition avoided.

(2) Neurocaulus

(3) N₂ exco avoid.

pest bot name family order leaf
 ③ Cirs Phyllocnistis Gracillariidae Lepidoptera range
leaf minima cimbella cirs cinnamom
~~Parasitoid~~

④ Cirs Papilio Lepidoptera
butterfly dumoulini Papilionidae

Damage
symptoms

- leaf mines into tender redness from zig-zag galleries
- infested leaf turn pale, distorted, dry up.
- secondary infection by fungus & bacteria causing 'cirs canker'
- young larva found on upper surface of leaf
- feed on leaf lamina margin & midrib
- organism up larva feed on mature leaves
- cause depilation of entire plant

Bionomics

- 1) Egg - 36-76 eggs/leaf 2-10 days.
- 2) Larva - pale yellow 5-30 days. - spin cocoon for pupation and later becomes leaves become distorted
- 3) Pupa - 5-25 days
- 4) Adult - tiny, silvery white moth fringed wings.

Management

- 1) Use NSKE 5% or neem oil 3%
- 2) Use 5-15% water / neem
- 3) ~~Spray Dithionos~~ spray Dithionos 20/ha
- 1) Spray Endosulphan
- 2) Spray Bacillus Thuringiensis 1g/l
- 3) hand picking.

• larva eat their own exuviae after each moult.
 3) Pupa - 8-11 days. pupates in soil.
 4) Adult - black head & thorax, creamy yellow coloration on underside of abdomen. wings → dull black with yellow markings → black antenna

• Early instar resemble bird dropping
 2) Larva - yellow green with brown like structure on dorsal side of last body segment
 8-16 days → summer
 pupates → Nov - Dec
 • larva eat their own exuviae after each moult.