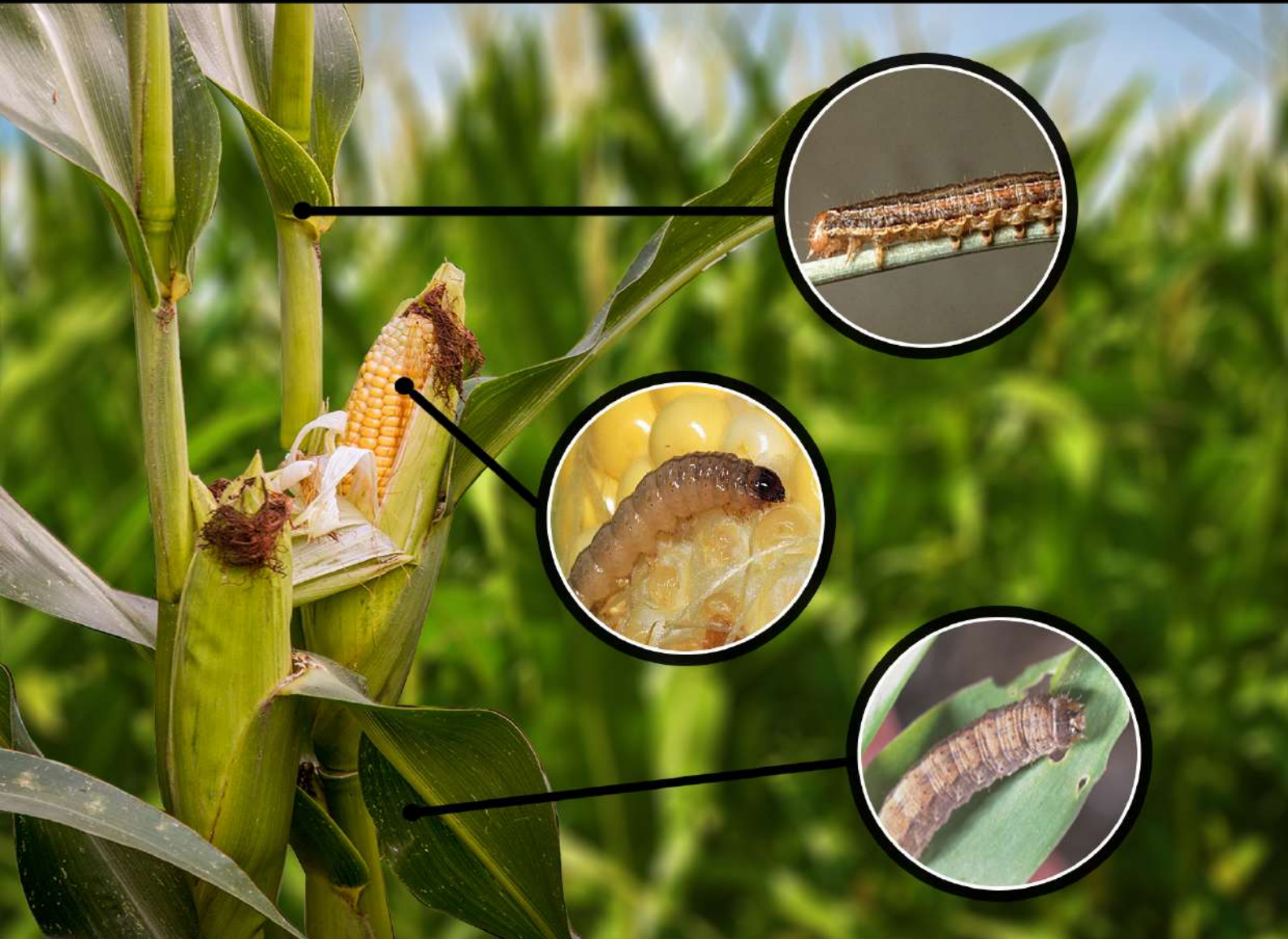




COMMON INSECT PESTS AND DISEASES OF

CORN





INSECT PESTS AND DISEASES OF CORN, NATURAL ENEMIES AND MANAGEMENT

INSECTS

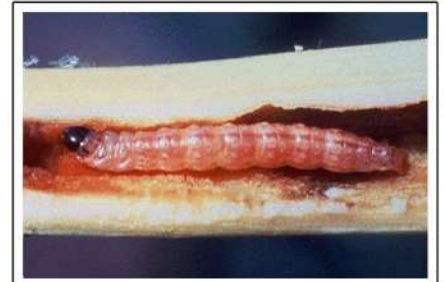
Corn Borer or Asiatic Corn Borer

Local Name: Dalipog (Ilokano)

Scientific name: *Ostrina furnacalis*

CONTROL MANAGEMENT

- Practice synchronous planting in contiguous areas.
- Pick and crush the egg masses and larvae manually.
- Detassel clumped tassels one or two days after tassel emergence or **detassel three out of four** corn plant rows.
- Apply trichograma parasitoids 33 to 35 days after planting or after hilling-up at three to four days interval.
- Crop rotation coupled with weeds removal.
- Deploy 10,000 to 20,000 earwigs per hectare 20 to 35 days after emergence of pest.
- Apply granular insecticide (*Carbofuran*) into the plant whorl 30-35 days after emergence in case of severe infestation.



White Grub (adult: May/June Beetle; Masked chafer; etc)

LN: Larvae: Abaling (Ilokano), **Adult:** Abal-abal (Ilokano)

Scientific name: *Phyllophaga* spp., *Cyclocephala* spp., *Popillia japonica* Newman



CONTROL MANAGEMENT

- Prepare land thoroughly before planting.
- Practice deep plowing in areas with chronic white grub infestation.
- Incorporate corn stubbles and stalks in the soil during plowing. These will serve as alternate food for the white grubs instead of the corn roots.
- Practice chemical treatment during severe infestation only.
- Some cultural control techniques such as crop rotation, weed control, mid-season plowing, and pasturing hogs on infested fields may provide partial control of white grubs.

Corn Seedling Maggot

Local Name: Ngilaw (Ilokano)

Scientific name: Delia platyura Meigen;

Atherigona oryzae Malloch

CONTROL MANAGEMENT

- Practice synchronous planting in contiguous area.
- Plant early to escape high maggot population.
- Use decomposed organic matter.
- Treat seed with *thiodicarb* or *carbofuran* before planting.
- Replanting is the only available management option since there are no rescue treatments for control of seedcorn maggot. The decision to replant should be based on the remaining healthy plant population, the date, yield expectation, etc. If replanting is done before June, a seed treatment and/or soil insecticide may be advisable. Seed corn maggot adults are being infested by fungal pathogens as temperature and humidity rises during the summer. A large number of infected flies are found dead and clinging to crops, weeds, etc.



Common Cutworm

Local Name: Arabas (Ilokano)



CONTROL MANAGEMENT

- Plow fields to remove weeds which may serve as alternate hosts.
- Handpick eggs and larvae.
- Make small trenches around the field and fill with cut grasses in the morning. These will serve as shade where the larvae can hide during the day to avoid the heat of the sun. The hiding larvae can then be collected in the early morning of the next day.
- Chemical spraying using pyrethroids can be done during severe infestation.



Semi-looper

Local Name: Dangan-dangan (Ilokano)

Scientific name: *Chrysodeixis chalcites*

CONTROL MANAGEMENT

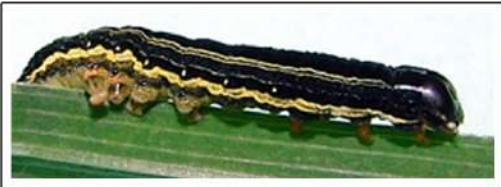
- Practice synchronous planting in contiguous areas.
- Handpicking is often sufficient to control the insect.
- Timely weed control.
- Use of BT Corn Hybrids as planting materials.

NOTE: We may omit or at least minimize use of chemicals as they affect the natural enemies or beneficial insects.



Armyworm

Local Name: *Igges ti bunubon*, Arabas (Ilokano)



A. Black Army Worm (BAW)

Scientific name: *Spodoptera exempta*

B. Grass Army Worm (GAW)

Scientific name: *Spodoptera Mauritia*



C. True Army Worm (TAW)

Scientific name: *Pseudaletia unipuncta*

D. Fall Army Worm (FAW)

Scientific name: *Spodoptera frugiperda*



CONTROL MANAGEMENT

- Collect and crush egg masses and larvae if possible.
- Employ chemical control only if there is an outbreak using pyrethroid or triazophos insecticides.

Corn Earworm

**Local Name: Tomato Fruit Worm;
Tobacco Budworm; etc.**

Scientific name: Helicoverpa zea

CONTROL MANAGEMENT

- Use plant resistant varieties with long and tight ear husks.
- Plant marigold around the field as trap crop.
- Install pheromone traps to capture the pest. Both sexes are captured in light traps whereas only males are attracted to the sex pheromone. Both trap types give an estimate of when moths invade or emerge, but pheromone traps are easier to use because they are selective. The pheromone is usually used in conjunction with an inverted cone-type trap.



NOTE: Generally, the presence of five to 10 moths per night is sufficient to stimulate pest control practices.

What type of insect is a corn earworm?

The corn earworm (*Helicoverpa zea*) belongs to the genus *Helicoverpa*, which is prominently known as moths. They are under the order of *Lepidoptera*. The corn earworm larvae damage many crops and are, therefore, termed as the 'worst agricultural pest' or the 'calamity pest.' Earlier, they were categorized under the genus of *Helicothis zea*.



Aphids

Local Name: Aplat (Ilokano)

Scientific name: *Rhopalosiphum maidis*

CONTROL MANAGEMENT

- a. Encourage natural enemies like spotted lady beetles, syrphid flies and green lacewings.
- b. Spray a mixture of hot pepper and powdered soap. Dishwashing liquid can be used in place of powdered soap.

Corn Thrips

Local Name: N/A

Scientific name: *Frankliniella williamsi*

CONTROL MANAGEMENT

- a. Practice synchronous planting.
- b. Remove alternate hosts such as grass species.





Corn Plant Hopper (CPH)

Local Name: N/A

Scientific name: Peregrinus maidis

CONTROL MANAGEMENT

- a. Eliminate weeds which serve as alternate hosts of the corn plant hopper.
- b. If Irrigation is available, regular irrigation can help replenish the corn sap sucked by the corn plant hopper.
- c. Increase planting distance to facilitate light penetration within the micro-environment of the crop.
- d. Follow recommended fertilizer application and split application of Nitrogen fertilizer.
- e. Practice fallow period of 2-3 months if crop rotation is not possible to break the life cycle of the plant hoppers.
- f. Plow under corn stubbles or plant debris immediately after harvest to kill remaining eggs, nymphs and adults.



Field Cricket

Local Name: *Kuriat (Ilokano)*



Common black cricket
Scientific name: *Gryllus bimaculatus*



Common brown cricket
Scientific name: *Teleogryllus testaceus*

CONTROL MANAGEMENT

- Seed treatment.
- Thorough land preparation before planting.

Oriental Migratory Locust
Local Name: *Dodon/Gantac (Ilokano)*
Scientific name: *Locusta migratoria manilensis meyen*



CONTROL MANAGEMENT

Trap the hoppers using pits to be collected and crushed.



Maize weevil

Local Name: N/A

Scientific name: Sitophilus zeamais

CONTROL MANAGEMENT

- a. Use plant resistant varieties with tight fitting and long husks.
- b. Keep storage clean.
- c. Dry thoroughly the harvested corn.
- d. Discard infested left-overs.
- e. Store seeds in airtight containers.

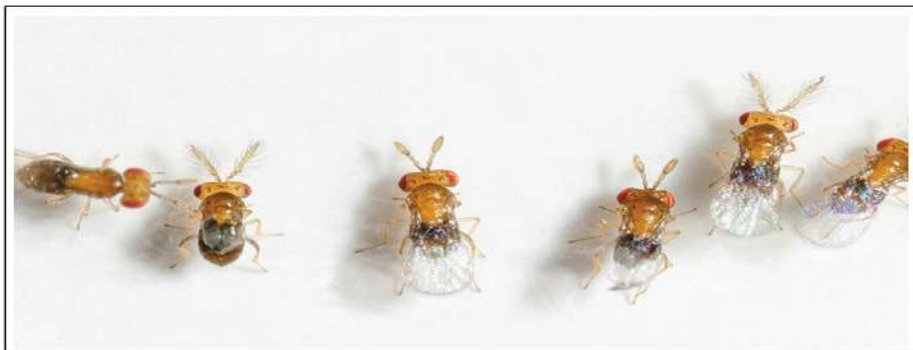
NATURAL ENEMIES OF CORN INSECT PESTS

Natural enemies are beneficial insects or farmer's friend that may control/kill insect pests.

1. PARASITOID/BENEFICIAL INSECTS

- Insects that parasitize other insects. Common parasitoid lays egg inside the insect's larvae. The egg of this parasitoid continues its life cycle inside the larvae (host) until it matures, eventually killing its host.

Parasitoids may attack all stages of their host (egg, larvae, nymphs, pupae, adults).



a. Trichogramma

- parasitoids of corn borer egg mass and earworm egg



b. Parasitoid Wasp

- targets semi-looper and caterpillars

2. PREDATORS

- This type of beneficial insects directly capture, feed on their prey (other insects).



a. Spiders

- traps, feed on adult and larvae of corn borer and many different species.



b. Dragon fly

- preys on adult semi-looper, cutworm, army worm and other adult insect pests.



c. Lady beetle

- eats aphids and corn borer egg mass

PREDATORS



d. Ants

- feeds on eggs and larvae and pupa of various insect pests

e. Earwigs

- attack larva and pupa of various insect pests specially the Asiatic corn borer



Adult Green lacewing



Green lacewing larvae feeding on

f. Lacewing

- aphids and leafydopterous pest



Brown Lacewing



DISEASES

Downy Mildew (Fungus)

Scientific name of causal agent:
Pernosclerospora philippinensis

CONTROL MANAGEMENT

- Use plant resistant varieties.
- Practice synchronous planting.
- Dispose immediately the infected plants by burying.
- Eliminate weed hosts.
- Treat seed using fungicides.

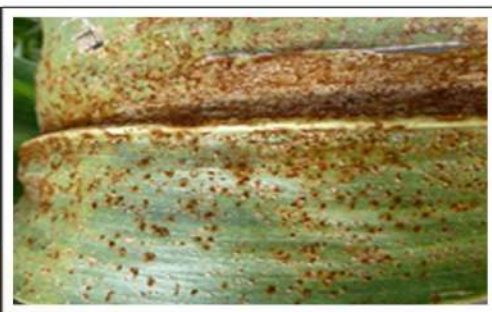


Leaf rust (Fungus)

Scientific name of causal agent:
Puccinia polysora

CONTROL MANAGEMENT

- Use plant resistant varieties.
- Apply fungicide as soon as the first few pustules are observed.



DISEASES

Banded Leaf & Sheath Blight (Fungus)

Scientific name of causal agent:
Rhizoctonia solani

CONTROL MANAGEMENT

- Bury infected leaves and stalks away from the farm.
- Practice deep plowing to help eradicate sclerotial bodies.
- Avoid close planting spacing especially during wet season.
- Avoid planting cultivars with very low ear height.



DISEASES

Bacterial Stalk Rot (Bacteria)

Scientific name of causal agent:

Erwinia caratovora

CONTROL MANAGEMENT

- Balanced fertilizer application. Excessive nitrogen in relation to Potassium favors the development of stalk rot.
- Follow recommended planting distance.
- Provide good drainage and improve soil condition by cultivation.
- Avoid plant injury.



Corn Mosaic Virus

Scientific name of causal agent:

Maize mosaic virus

CONTROL MANAGEMENT

- Plant resistant varieties.
- Remove infected plants as symptoms appear.
- Eliminate weeds as these are possible alternate hosts.
- Avoid planting during high aphid population or control aphid population as they are the carriers of the virus.

DISEASES

Corn Smut (Fungus)

Scientific name of causal agent:
Ustilago maydis


CONTROL MANAGEMENT

- a. Maintain well-balanced soil fertility based on soil test.
- b. Practice crop rotation.
- c. Avoid mechanical injury to plants during cultivation.
- d. Practice early removal and destruction of galls, otherwise, these will rupture and release spores.





Corn Mycotoxins


Mycotoxins are substance produced by specific fungus/molds as secondary metabolites that may or may not be toxic to animals and human. The primary fungi that produce mycotoxins in corn that are detrimental to livestock are the following:

Fungi/ Molds	Symptoms	Mycotoxins produced	Effect to mammals
<p style="color: red;"><i>Gibberella</i></p> <p>Red or pink mold that always begins at the tip of the ear.</p>		<p>a. Vomitoxin (<i>Deoxynivalenol</i>)</p>	<p>It is potent central emetic, to which the pigs are very sensitive and the ruminants are more resistant. It causes feed refusal and vomiting in swine.</p>

DISEASES

Fungi/ Molds	Symptoms	Mycotoxins produced	Effect to mammals
	<p><i>Aspergillus</i></p> <p>Grayish-green powdery mold that may begin at the tip of the ear or follow insect injury tracks. Infected kernels are brownish, lightweight, and shrunken.</p>	<p>a. Aflatoxin</p>	<p>Liver cancer Hepatic cancer to humans</p>
		<p>b. Ochratoxin</p>	<p>Acute nephrotoxin which is lethal to dogs, pigs, mice, and trout. Fatal doses of ochratoxin A causes necrosis in renal tubules (renal damage) and periportal liver cells, etc. Exposure to humans due to feeding on pork or meat, as ochratoxin A is fat soluble so it accumulates in the fat of affected animals.</p>
	<p><i>Penicillium</i></p> <p>Green or blue-green powdery mold that occurs between the kernels usually at the ear tip. Infected kernels can appear bleached or streaked.</p>	<p>a. Ochratoxin</p>	<p>Exposure to humans due to feeding on pork or meat, as ochratoxin A is fat soluble so it accumulates in the fat of affected animals.</p>

DISEASES

Fungi/ Molds	Symptoms	Mycotoxins produced	Effect to mammals
<p style="color: red; font-weight: bold; margin: 0;"><i>Fusarium</i></p> 	<p>White to pink cottony mold that can begin anywhere on the ear but often begins with insect damaged or split kernels</p>	<p>a. Vomitoxin</p> <p>b. T-2 toxin</p> <p>c. Fumonisin</p>	<p>It is potent central emetic, to which the pigs are very sensitive and the ruminants more are resistant. It causes feed refusal and vomiting in swine.</p> <p>Cytotoxic and causes hemorrhage, edema, and necrosis of skin tissues. Inflammatory reactions near the nose and mouth of animals are similar to some lesions found in humans suffering from ATA Thyroid disease.</p> <p>In most animals, impairs immune functions, causes liver and kidney damage, decreases weight gains and increases mortality rates. Respiratory difficulties, PPE (porcine pulmonary edema) which affects lungs and heart. At lower levels, damage in liver and pancreas damage can be observed, as well as immunosuppression in swine.</p>



For more information, you may contact:

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