Insect predators as a method of pest control

Agrisys Tanzania

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Newcastle University

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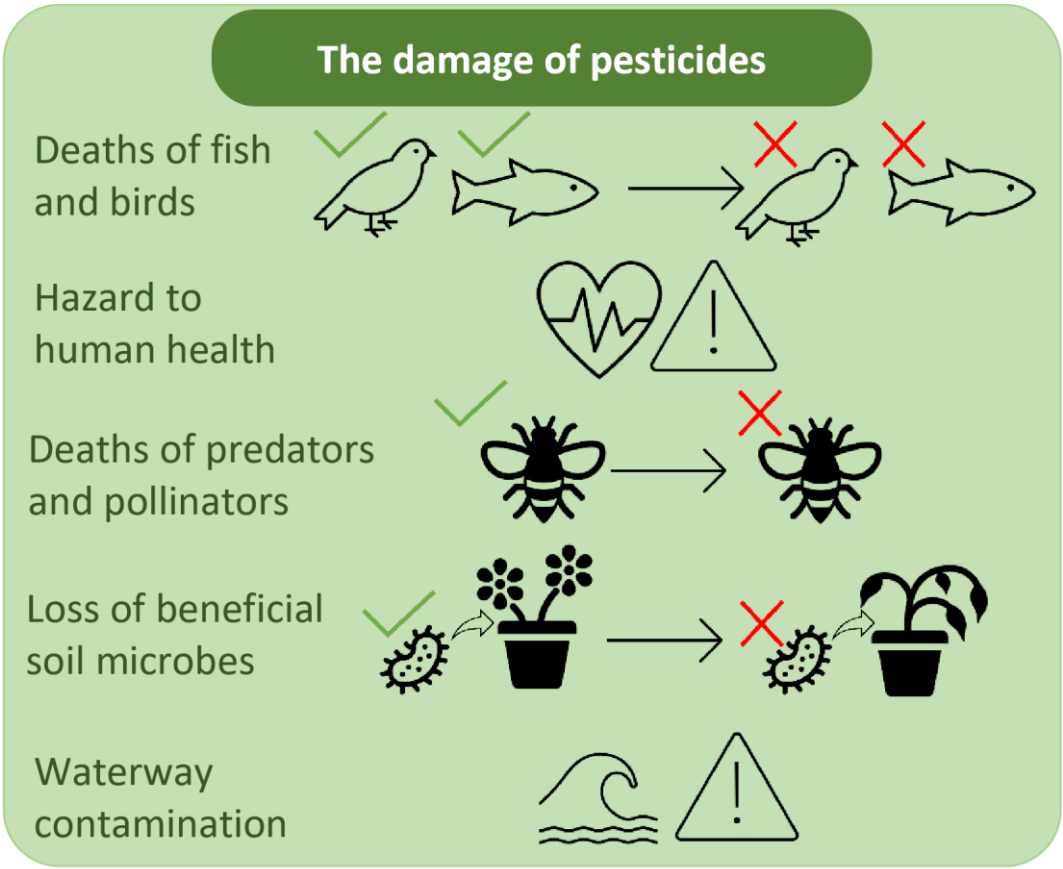
PREDATORS

Reducing the number of crop pests can increase crop yields. Pests can be controlled using pesticides; however, these can be expensive and are damaging to the environment.

The damage of pesticides



The careful use of pesticides is encouraged to reduce these damages. Choose organic pesticides instead of synthetic pesticides and ensure you are properly trained in the safe handling of pesticides before using them. Choose pesticides in the form of liquids and granules instead of powder as they can be controlled better. Try not to use a broad spectrum of pesticides and use them sparingly.

Attracting Predators

Why should we attract predators?
Predators feed on pests, acting as a free and natural form of pest control and an alternative to pesticides.

How can we attract predators?

Create more non-crop habitats (such as woodlands).

This will provide habitats for predators and attract them to the area.

Plant more flowering vegetation.

Predators also feed on nectar and pollen so this will attract them to the area.

Reduce pesticide use.

Predators are attracted to areas with pest colonies that they can feed on.

Green Lacewing (Chrysopidae family)

Characteristics:

- Pale green abdomen
- Long, transparent, lace-like wings
- Metallic looking eyes making them also known as the golden-eyed lacewing

Predator to:

- Cotton Jassid larvae
- Aphids
- Whitefly
- Caterpillars
- Leaf-beetle larvae

How to attract:
This species favour tree and shrub crops. They also enjoy flowering crops, such as buckwheat and sunflowers, that provide nectar and pollen for them to feed on.

Green lacewings can emit an odour as a defence mechanism when handled. Spot their eggs on hair-like stalks that reduce siblings eating the others before they hatch.

Wolf Spider (Lycosidae family)

Characteristics:

- Dark brown, hairy body
- Long legs
- 3 rows of eyes (4 on the lowest, two in the middle, two on the top
- Dominant, strong jaws

Predator to a range of pests including:

- Leafhoppers
- Stem borer moths
- Planthoppers

Actual Size

How to attract:
This species prefer cover under stones, logs, or leaf litter. The creation of non-crop habitats is encouraged to attract this species as well as limiting pesticide use.

Wolf spiders are named after their wolf-like habit of stalking and pouncing on their prey. They do not make webs, but instead create burrows in the ground. They are especially active at night or when the sky is overcast. Careful, they are known to bite humans but are not venomous.

Parasitoid wasps (Braconidae family)

Characteristics:

- Dull or dark in colour
- Wings that are sometimes spotted or banded
- Females have a long, distinct egg laying organ

Actual Size

Predator to a range of pests including:

- Stem borers
- Black bugs
- Leafhopper eggs

Fun Fact: Many wasps also serve as pollinators.

The female parasitoid wasps lay eggs inside the larvae or eggs of the host, and the larvae remains within the hosts body, feeding on its fluids and organs. The hosts die much slower than by being attacked by other predators, however parasitoids increase their numbers much faster than predators, making them very effective.

How to attract:

Limit pesticides as much as possible as they can be toxic to this species as well as pests. Planting a variety of flowers will attract this species as they also depend on nectar to survive.

Orb Weaver Spider *(Isoxya tabulate)*

Actual Size

5-6 mm in length with a bright yellow/ orange box-like abdomen, dark brown legs and 2 rows of 4 eyes.

Feed on pests such as leafhoppers, planthoppers, flies, and sometimes butterflies and grasshoppers. They can sometimes bite but are not venomous.

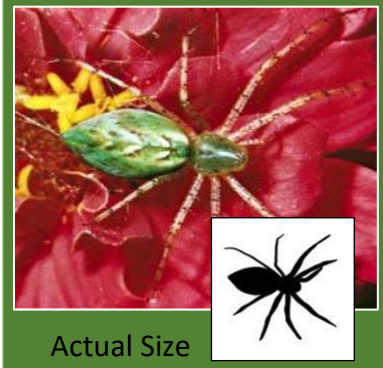
Ladybird Beetle *(Cheilomenes lunata)*

Actual Size

1.3-10 mm in length, with either a black base with yellow or orange spots or a yellow or orange base with black spots.

Feed on sap-sucking pests such as Aphids, Mealybugs and Planthoppers. Some feed on plants, making them both a pest and predator.

Lynx Spider (Oxyopidae family)



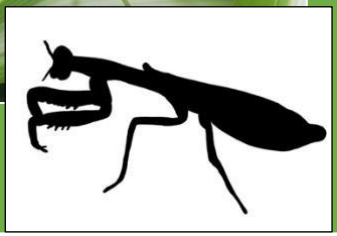
Actual Size

Approximately 12-22 mm in size and come in a variety of colours, including green, orange, brown, and black. Eyes arranged in a hexagon and abdomen tapers to a point.

Mainly feed on moths such as stem borers and they do not build webs, but instead hide from their prey until within striking distance.

Praying Mantis (Mantidae family)

Actual Size



Often difficult to spot due to their ability to camouflage. Come in a variety of colours but have two enlarged, front legs with spines on the inside, used to strike their prey.

Consume a variety of insects, including their own kind.

Earwig (Forficulidae family)

Actual Size

5-50mm and are brown or black with a hind pair of forcep-like pinchers used for defence.

Can be found within soils and feed on stem borer larvae and leafhopper larvae.

Fire Ant *(Solenopsis punctaticeps)*

Actual Size

1-5 mm in size and can be a range of colours including red, yellow, brown, and black. They communicate through chemical secretion and through noises made by drumming one body part against another.

Feed on any insect they can subdue, including blackbugs. Are aggressive and can inflict a severe sting.

AGRISYS Tanzania Project Information

AGRISYS Tanzania is a project researching biological and human wellbeing benefits that can be provided by agroforestry in tropical landscapes. We work to:

1. Identify the key benefits of agroforestry;
2. Identify the agricultural potential of agroforestry landscapes;
3. Study sustainable agriculture practices and their link to human wellbeing.

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Contact us at:
agrisystanzania@gmail.com

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