Beneficial and Harmful Insects Manual 2024

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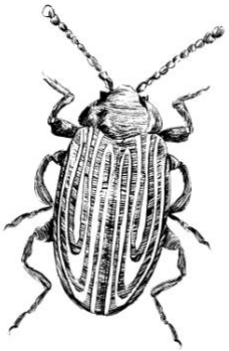
INSECTS



Introduction:

Community Through Colors operates La Finca de Hamberto, a small-scale USDA-certified organic farm in Vieques, Puerto Rico, and educational project AVES (Apoyo en Vieques para la Educación y la Sostentabilidad). We are a proud member of the Vieques Agricultural Collective. Vieques is a historically underserved community with a majority Spanish-speaking population.

The following documentation outlines beneficial and harmful insects which may be found in garden beds. Since La Finca Hamberto is an organic farm, natural methods are used to control pests. The purpose of this guide is to provide useful information on harmful and beneficial insects, and integrated pest management applications used at La Finca de Hamberto. This guide is intended to help the following farming populations: farmers in the Caribbean region; historically underrepresented/underserved farmers; socially disadvantaged farmers; and limited-resource farmers. ***NOTE: This document provides information on operations at Community Color's La Finca de Hamberto Farm and is not applicable to all farms or farming operations. Please feel free to use or adapt the information in this manual to best suit your needs.***

This is a living document and will be updated as needed to reflect the most current processes at La Finca de Hamberto.

HARMFUL PESTS

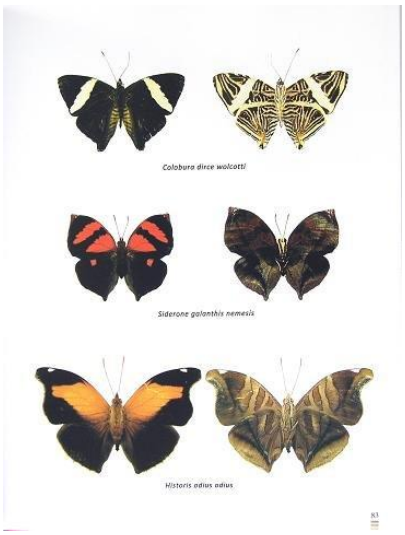
Pest	Description	Pictures	Treatment
Beetles	Their front pair of wings are hardened into wing-cases, called elytra, distinguishing them from most other insects. Usually all beetles found in gardens are destructive for plants, the only common exception being ladybugs.		Pyrethrin or Neem. For small crops with persistent beetles, manual removal and disposal in soap water may be more effective.
Ants	A group of ants chewing on a plant's stem or trunk is capable of killing a garden plant. In addition, ants will cultivate and protect other damaging garden pests, like aphids and scale.	 Red ants cultivating aphid colonies on plants	There are different treatments, like ant trapping or boiling water, however, you should focus on identifying what is attracting the ants to your plants. You will most likely find aphids on your plants, and treating that is the first step in eliminating ants.
Scale	Scale varies in color, shape, and size, but most often appears as small, brown or white, rounded lumps on your plant's leaves and stems. Common on coffee and often accompanied by an ant hill at the base of the stem.		Neem or Dish Detergent diluted in water. Manual removal and then consistent treatment with either one of the previous treatments.

Hornworm Caterpillar	Hornworms are actually caterpillars, and can be one of our biggest threats against our tomato plants and occasionally papaya trees.		Manual removal and elimination. Spinosad
Leaf Miners	Leaf miners are small larva that grow and bore inside the leaf, usually visible on the top of the leaf. Something usually seen is a white eaten trail that progressively gets bigger, sometimes you may even spot the small larva in the act.		Remove leaves that have larva. Neem or spinosad
Aphids	Aphids are a group of small, green, yellow, or brown/reddish bugs that suck on the sap contents of plants. Aphids attract ants, and ants usually protect and spread aphids to consume the sappy byproduct.		Soap and water mixture. Neem Oil Predatory insects
Grubs (beetle larvae)	Commonly found in the soil, these large, chunky, white larvae are actually harmless in this stage. However, they are beetle larva, and as stated previously, we do not want beetles in our garden. They have six legs near the head, and are usually seen with brown or red heads.		Manual removal and elimination- these are a tasty snack for chickens!

Moths	This group of pests usually go to specific plants (like the tomato moth goes to tomatoes) and go to lay their eggs on the plant. Their larvae then hatch and eat the infested plant.		Neem oil is a smelly deterrent, and deterring moths is the first step in controlling them. If your plants already have eggs, soapy water or spinosad can be used to eliminate eggs and larva.

BENEFICIAL BUGS

Insect	Description	Pictures	Attraction
Bees	These lovely insects are always welcome in the gardens. They pollinate our crops, and even promote biodiversity and resilience. A hybrid between European and African honey bees, it is said that they collect a decent amount of honey, but are docile. Very resilient to viruses. A variety of bees may be found in Vieques, including Honey Bees and Carpenter Bees.		Plants that attract bees may include: Basil Passion Fruit Cosmos Marigold Tomatoes Herbs (oregano or thyme) Fruit trees
Lady bugs	Lady bugs are predatory beetles, and are usually seen eating aphids and other pests in the garden. Rare to find them in vieques, so they are also a biodiversity indicator.		Planting flowering plants or plants that attract aphids, scale, and mites. Providing shelter and a water source.
Spiders	Another predatory organism; will eat plenty of damaging moths, grasshoppers, mosquitoes, wasps, aphids, and beetles.		Flowering companion plants; these attract the spider's main food source.

Earthworm	Earthworms are a great indicator of having a great amount of organic matter. They are also an indicator of fertility, and water content in the soil. Rarely you will spot these guys in dry areas. But after heavy rains they might go up to the surface. They are prime decomposers and further fertilize the soil.		Organic matter and compost
Butterflies	Much like bees, butterflies are needed to pollinate our plants. Some plants can only be pollinated by butterflies. Note that while many species, such as the monarch and harlequin butterfly, are beneficial insects, the great southern white butterfly is harmful due to caterpillar activity.		Melliferous plants: Cosmos/marigold

SPRAYING PESTICIDES

When your plants need pesticides a very important rule is to do it in the afternoon. If it is done in the morning, you risk burning the plant with pesticide. This is even more true if you are using natural pesticides, which usually have a mix of natural oils that cover the whole plant. Another tip is to make sure to spray the foliage, but avoid the pesticide coming into contact with the roots. Therefore, spray only foliage and not the soil.

Organic pesticides used by La Finca Hamberto include Water + Dish Soap (unscented and dye free), Spinosad, and Neem Oil. These are both organic and safe for plants and soil. We use them sparingly because our mission is to reproduce resilient plant specimens, including pest resilience. However there are always exceptions, such as a) a plant is heavily infested with a pest b) an entire crop is affected by a pest c) the plant is visibly sick and dying d) a previously sick plant was donated.

Water and dish soap: Soap kills many insects by disturbing their cell metabolism and dissolving the waxy layer that holds in their body moisture.
Spinosad: Spinosad is a naturally occurring bacteria that kills bugs that actively consume the plants, and can be used for a variety of worms, beetles, and leaf miners. Keep in mind that bugs that just go to lay eggs may not get affected by spinosad.
Neem oil: Neem oil diluted in water is commonly used for almost all pests. However, neem oil has to be properly diluted and used in moderation. It must also not get into heavy contact with the soil. If treating something with neem oil, do it once every week or every two weeks until the pest is gone.