

# *Organic Production.* Pest and Disease Management

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1. Introduction to Pest and Disease Management
2. Proactive/Preventative Pest Management
3. Allowable Organic Sprays and Spray Technology
4. List of Organic Insecticides, Fungicides and other controls
5. Pest management plans

## 2. Proactive/Preventative Pest Management

- Successful organic farming requires a whole-farm approach. This means managing a crop or animal as an integral part of the farm system rather than in isolation.

- Organic farming is not just a matter of substituting an organically acceptable chemical for what you used to use.

**Setting up natural systems to prevent or reduce pests.**

### Biodiversity

- The more biological complexity designed into a farming system means the less chances for pests and pathogens to colonize and dominate that system.
- The aim is to create robust sustainable bio-diverse systems with mechanisms that prevent and control most pests and diseases

### Soil Health

- Soil health is the key principle to successful sustainable farming.
- Correctly balanced soil ensures minimal disease and insect damage.
- These soils are rich in beneficial organisms.

**Insect damage controlled by improving soil nutrition and organic matter leading to plant health**

**Healthy plants have a greater ability to beat pests and diseases**



## Composted Field in Tigray resist Rust



Wheat grown on compost treated field

Wheat grown with chemical fertilizers and requiring spraying with fungicide

Wheat infested with stripe rust and sprayed – gave yield of 1.6 t/ha



Wheat grown on composted soil resist the rust – gave yield over 6.5 t/ha



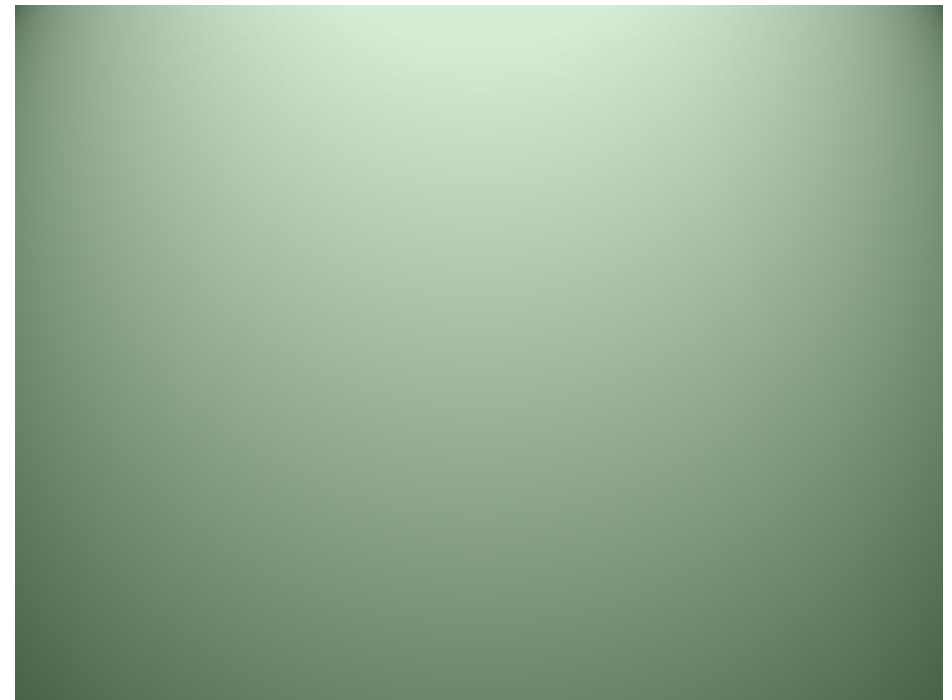
Most of the pests are controlled through a number of bio control strategies.

### Major bio-controls

- Ants
- Insect eating birds
- Ladybirds
- Lacewings (*Mallada spp*)
- Hover flies (*Syrphidae*)
- Spiders
- Assassin Bugs
- Wasps

## **Insectaries**

- Refuges of flowering plants are known as insectories
- Many beneficial insects have a range of host plants.
- Some useful species such as parasitic wasps, Hoverflies and Lacewings have carnivorous larvae that eat pests however the adult stages live mostly on nectar and pollen from flowers.
- Flowers provide beneficial insects with concentrated forms of food (pollen and nectar), increase their chances of surviving, immigrating and staying in the area.
- Very importantly flowers also provide mating sites for beneficials, allowing them to increase in numbers.



## **Sustainability Eco-intensification**



... using high diversity nature for promoting beneficial insects and combating pests.

... spraying extracts of plants and other natural compounds against pests and diseases.

... using robust varieties.



## **Sustainability Eco-intensification**

*Insectaries*

Refuges  
Created by  
Strip  
Mowing



**Sustainability  
Eco-intensification**

**Maximises  
solar capture**

**Fixes nitrogen  
and soil carbon**

**Flowers attract  
beneficial  
insects**



Legume vines in fruit trees



Flowering plants with grapes at UC Davis, USA

**Eco-intensification  
Agroecology**

*Insectaries*

**Borders of  
flowers  
create  
refuges for  
beneficial  
insects**

