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*

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**Eco-intensification**

**Agroecology**

- Insectaries
- Borders of flowers create refuges for beneficial insects

*Flowering plants with grapes at UC Davis, USA*