



Syrphids: The Hovering Heroes of Our Fields

*Nitish Kumar, L. S., Suma, N. M. and P. Spandana

Department of Agricultural Entomology, College of Agriculture, UAS, GKVK,
Bengaluru, Karnataka, India

*Corresponding Author's email: nitishkumarls1241@gmail.com

Tiny flower visitors that help farmers fight insect pests naturally

Look closely at a flowering plant and you may notice a small insect hovering almost magically in one place before suddenly darting away. It may look like a bee or wasp, but it could actually be a syrphid, commonly called as hoverfly or flower fly. These fascinating insects are often overlooked because of their small size. Yet, they perform two important jobs in agricultural ecosystems- the adults visit flowers and contribute to pollination, while their larvae prey on insect pests, primarily on aphids. Certain hoverfly species also feed on other small and soft bodied insects like thrips, mealybugs, scale insects, psyllids and leaf hoppers. In this way, syrphids act as both pollinators and natural pest controllers.

What are syrphids?

Syrphids belong to the insect family Syrphidae under the suborder Brachycera and order Diptera. There are thousands of species of syrphids distributed across the world. Many have striking yellow-and-black patterns, which make them look like bees or wasps.

But there is an easy way to tell them apart, syrphids are true flies and therefore have only one pair of wings. Their remarkable hovering flight is responsible for their common name, "hoverflies."

Bee or hoverfly?

Feature	Syrphid/hoverfly	Bee
Wings	One pair	Two pairs
Body	Often smooth and slender	Usually hairy
Antennae	Short	Longer
Flight	Excellent hovering ability	No prolonged hovering
Food of adults	Mainly nectar and pollen	Nectar and pollen
Larval role	Many species are predators	Usually not predators

The resemblance of some syrphids to bees and wasps is not accidental. Their colour patterns may help discourage other predators attacking syrphids - a fascinating example of protective mimicry in nature.

The surprising secret is in the larva

When we think about hoverflies, we usually imagine the colourful adult. However, the real pest-fighting heroes are often the larvae. Syrphid larvae look completely different from adults. They are generally soft-bodied, legless and maggot-like. Several predatory species live among colonies of aphids and actively feed on them. A single larva can consume numerous aphids during its development, although the number varies with species, prey and environmental conditions.

A simple life story



Thus, the same insect can provide different ecosystem services at different stages of its life.

Aphids: the favourite prey

- Aphids are among the most troublesome sap-sucking pests of crops. They occur on vegetables, pulses, cotton, fruit crops and many other plants.
- This is where syrphid larvae become valuable.
- The female hoverfly often searches for plants containing aphid colonies and lays her eggs nearby. After hatching, the larvae begin searching for prey.
- Some important aphids associated with agricultural crops include:

Aphid	Examples of crops attacked
<i>Aphis gossypii</i>	Cotton, chilli, vegetables
<i>Aphis craccivora</i>	Pulses and legumes
<i>Myzus persicae</i>	Vegetables and horticultural crops
<i>Lipaphis erysimi</i>	Mustard and other crucifers

Where aphid colonies occur, syrphid larvae may also be found, making them a useful sign that nature is already working to control the pest.

Meet some important hoverflies

Several syrphid species and genera are known for their predatory larvae.

Syrphid	What makes it interesting?
<i>Episyrphus balteatus</i>	Well-known aphid predator
<i>Syrphus</i> spp.	Important predators of aphids

Syrphid	What makes it interesting?
<i>Eupeodes</i> spp.	Common flower-visiting hoverflies with predatory larvae
<i>Scaeva</i> spp.	Large hoverflies whose larvae prey on aphids
<i>Sphaerophoria</i> spp.	Small hoverflies associated with aphid colonies
<i>Allograpta</i> spp.	Important predatory hoverflies in several regions
<i>Ischiodon</i> spp.	Common hoverflies with aphid-predatory larvae

Among these, *Episyrphus balteatus* is one of the best-known hoverflies, playing an important role in aphid biological control.

Flowers are their fuel stations

If syrphid larvae are the farmers' pest controllers, adult hoverflies are the flower visitors. Adults feed mainly on nectar and pollen. Flowers provide them with the energy required for flying, survival and reproduction. Therefore, an agricultural field with flowering plants can be much more attractive to hoverflies than a completely flowerless monoculture.

Plants that can attract hoverflies

Flowering plant	Why it helps
Coriander	Small flowers provide accessible nectar
Fennel	Attractive umbel-shaped flowers
Dill	Useful nectar and pollen source
Carrot	Umbel flowers attract beneficial insects
Mustard	Abundant flowering resource
Marigold	Provides floral resources
Buckwheat	Excellent flowering resource

This leads to a simple principle: More flowers → More adult hoverflies → More opportunities for reproduction → More predatory larvae

The two-in-one insect

One of the most fascinating things about syrphids is that they can provide two ecosystem services.

Syrphid stage	Main activity	Benefit
Adult	Nectar and pollen feeding	Pollination
Larva	Predation	Pest suppression

This makes syrphids particularly valuable in diversified agricultural systems.

How can farmers encourage syrphids?

Farmers do not necessarily need to buy and release hoverflies. In many situations, the first step is simply to conserve the syrphids already present in the ecosystem.

- 1. Grow flowering plants:** Maintain flowering plants around field borders or in suitable strips.
- 2. Avoid unnecessary insecticide sprays:** Repeated use of broad-spectrum insecticides can eliminate beneficial insects along with pests.
- 3. Protect field margins:** Field margins containing diverse vegetation can provide food and shelter.
- 4. Practice crop diversification:** Intercropping and diversified cropping systems can provide a wider range of resources for natural enemies.
- 5. Learn to recognize larvae:** A legless, maggot-like larva found among aphids should not automatically be considered a pest. It could be a valuable syrphid larva.

Syrphids v/s chemical control

Chemical pesticides can provide rapid pest suppression, but indiscriminate applications may also affect beneficial insects. Syrphids offer a different approach: biological regulation through natural predation.

Conventional approach	Syrphid-based natural control
Depends on external pesticide application	Uses naturally occurring predators
May affect beneficial insects	Can contribute to natural pest regulation
Requires repeated monitoring and application	Natural enemies remain active in the ecosystem
Short-term pest knockdown	Can contribute to longer-term ecological regulation
May leave residues depending on product	No pesticide residue from predation itself

Syrphids should not be viewed as a complete replacement for pesticides in every situation. Rather, they are an important component of Integrated Pest Management (IPM).

A tiny insect with a big message

The presence of hoverflies in a field tells us something important: agriculture is not just about crops and pests; it is about interactions among many organisms. Aphids feed on plants. Syrphid larvae feed on aphids. Adult syrphids visit flowers. Birds and other predators may feed on syrphids. Plants provide food and shelter to numerous organisms. This interconnected system is what makes an agricultural ecosystem function.

Climate change and the future of syrphids

Changes in temperature, rainfall patterns, flowering periods and pest populations can influence syrphid activity. At the same time, climate change may alter the relationship between aphids and their natural enemies. This makes the conservation of beneficial insects increasingly important. Creating flower-rich, pesticide-conscious and biologically diverse farming landscapes can help maintain natural enemies such as syrphids while supporting broader ecosystem resilience.

Look before you spray!

The next time you see a tiny yellow-and-black insect hovering over your crop, do not immediately assume that it is a pest. It may be a **hoverfly**. And if you find a small, legless larva moving through an aphid colony, it may be an even more valuable discovery - a syrphid larva working silently as a natural pest controller. Syrphids remind us that sometimes the best pest-control agents are already present in our fields. All they need is food, habitat and protection from unnecessary disturbance.

Remember

**"These tiny insects work double duty-adults pollinate flowers,
while larvae act as predators."**