



## Ultimate Guide to Aphids

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The lush green plants are drastically being attacked by most of the serious sucking pest. Off all the pests that invade farm major culprit is aphid, which causes damage to one of the second crop in farms, gardens etc. Aphids (*Aphis craccivora*) love the goodness of the crop and can suck the sap from the crop viz., cucurbits, *Solanaceous* (tomato), Brassica and leafy vegetables. Aphids are the common pest to the gardeners, commercial growers because of their species diversity and rapid reproduction. So in order to reduce the infestation by aphids one must know about the aphids: Aphid belongs to family Aphididae, aphids are most destructive sucking pests despite of various colors the female aphid are most likely known to be flightless whose main job is to reproduce. The continuous reproduction by aphids makes them more vicious pest of the farms. There are at least 4000 species of the aphid, and almost every plant found attacked by them.

### Identification of Aphids

Aphids are small soft bodied insects, pear-shaped that suck sap from the plants and are invisible to naked eyes. Aphids can found in variety of colors such as red, green, black, brown, white and grey. The aphids possess long antennae, and their nymphs looks similar to adults, most of the species have two short tubes called cornicles projecting from their hind end. They are always found feeding in dense cluster often under curled leaves there they hide from their natural enemies. The aphids are wingless and move slowly because of which they become too crowded and some of them available to grow wings and can fly to colonize.

### What Provoke Aphids to Cause Damage?

Aphids usually attack those plants that have glutathione (a chemical produced by struggling plants) as they get benefits from the glutathione. In order to control the infestation of aphid, it is very essential to know what can cause a plant to be stressed. The reasons due to which plant get stressed are as follows:

- Lack of water and sunlight
- Unplanned transplanting that tends to stress plants.
- Extreme pruning of shrubs or trees which leads to enhancement of side shoots succulent suckers
- Use of insecticides that are in favor of aphids
- Planting inappropriately in a not so friendly climate conditions
- Use of nitrogen rich fertilizer that cause more stress to the plant

## How Aphids Feed?

Most of aphids derive every benefit from the plants they get they do not stay for so long on particular plant as they prefer young and succulent plants. Aphids are well known for their ability to quickly colonize in plants. Aphid can weaken sensitive seedling and can cause leaf stunting, yellowing and curling in the mature plants. Aphids suck the sap by piercing sucking mouth parts to feed on plants, and found under side of the tender terminal growth. Aphids excretes large amount of honey dew that promotes the development of the sooty mould which can attracts ants. This cause those to act as vector for many plant viruses and can also inject toxins into plants which distort growth and cause gall formation. They mostly feed on sap of phloem vessels in the plants, once the phloem tissue is punctured it makes sap which is under pressure to be forced into aphids food canal. They also feeds on xylem sap as they use this sap to replenish their water balance, the xylem sap under negative hydrostatic pressure requires active sucking and makes easy for aphids to feed on xylem sap to get rehydrated. The **aphids effect the agricultural crops** as they tends to feed on phloem sap which causes twitching of the leaves, enhance the metabolic imbalance and sometimes leads to the leaf loss which ultimately reduce then quality and quantity of the these aphid attacked plants.



Fig: Aphids on mustard siliqua

## How to Control Aphids?

### 1. Organically:

- Start examining the plants regularly as soon as any aphid is sport tries to squash them and remove them with hands. The aphids should be removed from the tip of plants before they form colonies.
- Blast the small infestation of the aphid population with the jet of water. The aphids will knock off and fall on ground unlikely to return to the plants.
- Spray soapy water on the plants found infested with aphids. Add dish soap drops in spray bottle and top it with water, now spray the solution over plants reaching underside of the plants, this soapy water traps and suffocates the aphids.
- Winged aphids quickly cause and spread plant diseases, to avoid this cover susceptible plants such as cucumber, spinach and celery.

### 2. Biologically:

Natural enemies reduce the number of another organism through predation, parasitism and other means. The most important natural enemies for aphids are: ladybird, lacewing, syphid flies, soldier beetles and some small parasitic wasps. Planting some flowers like gaillardia, lavender, cosmos, clover, buckwheat and hyssop etc around the garden/ field attract some beneficial insects which reduce aphid population.

### 3. Culturally:

Aphids can be controlled culturally by manipulating the cultural practices at an appropriate time. Cultural method for aphid control is more environmental friendly and is even safer for farmers. The followings are some of the practices which we practice during cultural control:



Fig: Ladybird beetle fed aphids

- Disrupt the habitat of the aphids around the cropping area.
- Adjustment in the time of sowing, spacing in the plants and nutrient availability to the insect pest.
- Use silver reflective plastic mulches.
- Control of weeds.

#### 4. Chemically:

Aphids can be permanently controlled by using some insecticidal soaps and horticultural oils. These chemicals help to get rid of aphids permanently. The oil works by smothering these soft body insects and the soaps used to kill these by rupturing their cuticle (protecting covering). Farmers are always given advice to use pesticides only in severe attack, as some chemicals cause injury to main crop and can also lower the population of the natural enemies which are beneficial insects. Also the use of chemicals is harmful to humans and many animals. Sometimes when we apply insecticides near water source, they leach out and move to water bodies affecting the aquatic lives and purely affecting the nature and creating imbalanced ecosystem. Common insecticides which are recommended for controlling aphids are as follows:

- Horticultural oils- canola oil, soya bean oil etc.
- Botanicals - neem oil, garlic oil, rosemary oil and pyrethrins etc.
- Pesticides- Malathion, Imidacloprid, Sulfoxaflor, Bifenthrin, cypermethrin
- Insect growth regulators- Methoprene
- Microbial - *Beauveria bassiana* , *Metarrhizium anisopliae* etc.

