

LADYBIRDS / LADY BEETLES (*Coccinellidae*)

Adult ladybird on cucumber. Possibly *Nephus quadrimaculatus*



Stethorus punctillum—a minute ladybird which eats 140 mites per day!



Adalia bipunctata
2-spot ladybird



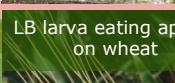
Ladybird Larva



Adult ladybird and lacewing on almond



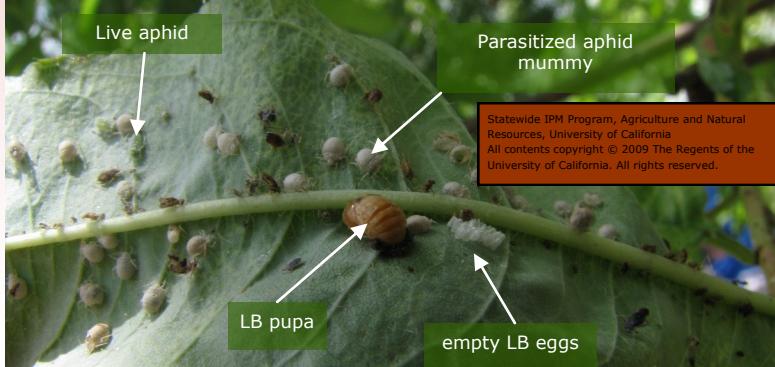
LB larvae on poplar



LB larva eating aphids on wheat



LB eggs on potato



Description

There are numerous species of ladybird (LB) and they are nearly all predators with strong biting mouthparts both in the larval and adult stages. They go through the normal insect lifecycle of egg, larva, pupa and adult. Although the adults are well-known, it is important to recognise the other three stages—see photos. They overwinter as adults and in spring they lay up 1,500 eggs each.

Most ladybirds eat a wide range of aphids, mealybugs, whiteflies, leafhoppers, thrips, mites, scale insects and other small larvae. Cannibalism of LB eggs is common and allows first generation larvae to survive when aphids are scarce.

Ants are a major enemy of LB larvae. They can successfully protect 100% of aphids and drive away LB larvae and adults. Ants also remove LB eggs.

At low temperature (5-10°C), aphids breed faster than LB, but at higher temperatures (>11°C), LB consume aphids faster than aphids can breed.

Management in IPM

Some pests can be allowed to build up until the predator takes control, others cannot. Thus aphids that transmit viruses cannot be tolerated must be controlled chemically or by other methods, but some aphids that attack leaves (e.g. black bean aphid) can often be left till ladybird numbers build and control them.

With the exception of the Mealybug Destroyer (see Mealybug card) and *Stethorus* (below), it is seldom worth introducing ladybirds to crops. However, by avoiding harmful pesticides, LB numbers can rise very fast naturally and they provide valuable control of pests, especially aphids.

In general pyrethroids (e.g. cypermethrin, lambda-cyhalothrin), carbamates (e.g. carbaryl) and organo-phosphates (e.g. chlorpyrifos, dimethoate) are highly toxic to ladybirds. One exception is the carbamate, 'pirimicarb'. Neonicotinoids (e.g. imidacloprid) are less harmful applied as a drench or through the irrigation than when applied as sprays.

Neem oil and azadirachtin are slightly toxic to ladybirds. Buprofezin, pyridaben, pymetrozine, Bt, clofentezine, spinosad, dicofol are harmless.

Stethorus punctillus is a minute ladybird which consumes up to 140 *Tetranychus* mites per day. It can be purchased, but may occur naturally.