

## 生物防治 Biological Control

**生物防治**是指以生物來防治害蟲。這些生物都是害蟲的天然殺手，主要可分為3類：捕食者、寄生性生物和病原體。捕食者都是一些益蟲因它們會捕食其他農作物害蟲。瓢蟲、草蛉、步甲和蜘蛛都是害蟲的天然殺手。



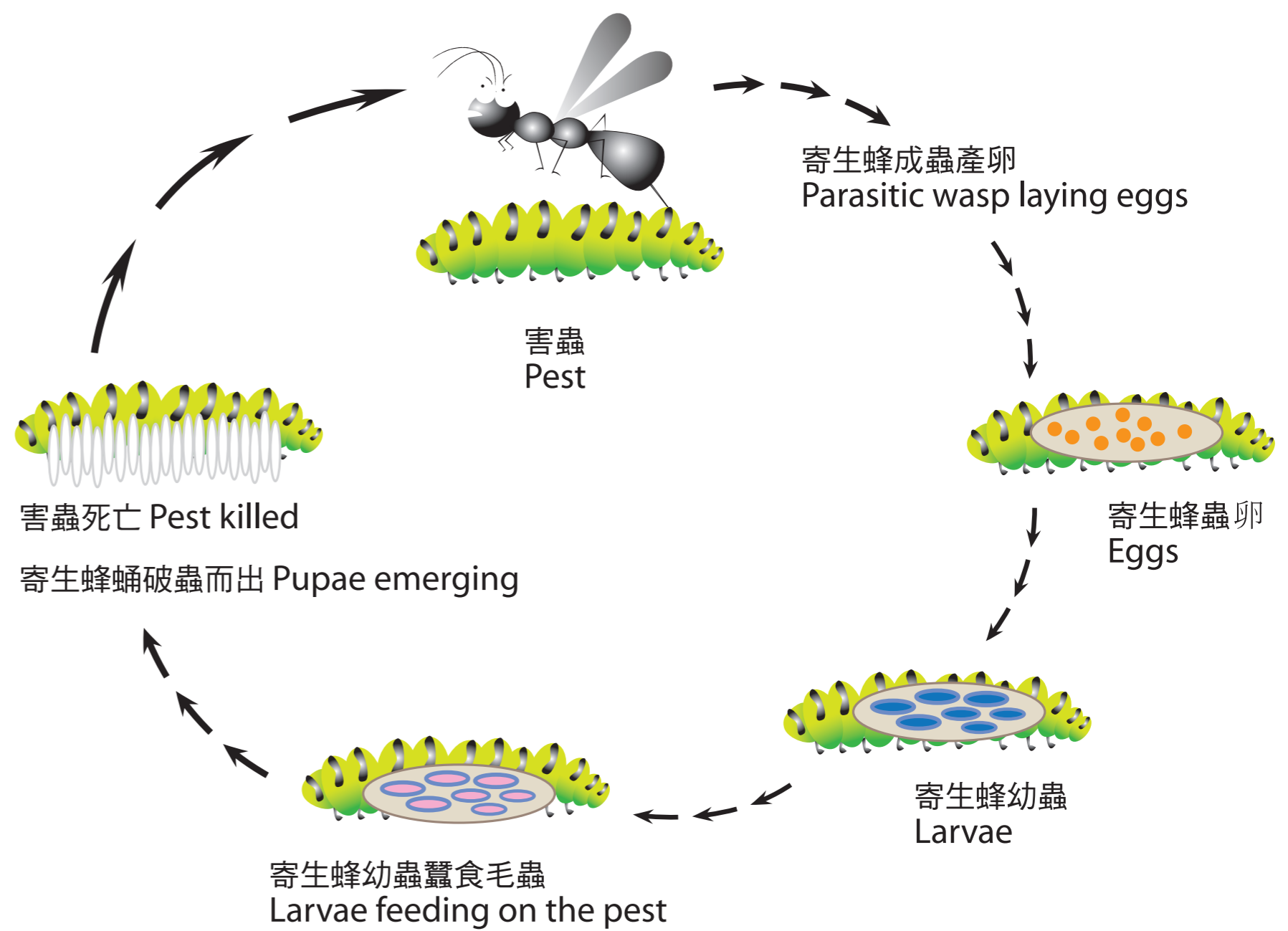
### Biological Control

refers to the use of living organisms to control pests. These living organisms are the natural enemies of the insect pests and they mainly fall into three categories: predators, parasites and pathogens. Predators catch and eat their prey. Some common predatory arthropods include ladybird beetles, lacewings, carabid beetles and spiders.



用來防治害蟲的寄生性生物，常見的有寄生蜂和寄生線蟲。寄生蜂不會直接殺死其宿主，但到某個生長階段牠便會在宿主所產的卵或宿主幼蟲體內產卵，卵子孵化後，寄生蜂幼蟲便會蠶食宿主的組織，最終把牠殺死。

Parasites which are commonly used for pest management include parasitic wasps and the nematodes. Parasitic wasps are also known as parasitoids. These wasps do not kill their hosts directly but lay their eggs within the hosts during a particular stage of the insect. When the eggs hatch, the larvae feed on the hosts and ultimately kill them.



至於用作生物防治的病原體，主要是指可致病的微生物，例如細菌、真菌和病毒等。但由於這些微生物的天然狀態很難直接應用於害蟲防治，因此通常會配製成方便易用的微生物殺蟲劑供農夫使用。

For biological control agents that are pathogens, they mainly refer to the disease-causing micro-organisms such as bacteria, fungi and viruses etc. As it is very difficult to use them in its natural forms, they are mostly formulated as microbial pesticides products that are easy and convenient to use.

天敵在自然環境中很常見，有機農夫只須知道如何提供有利其生存的環境條件，便可把牠們吸引過來並留在耕作系統內。種植不同種類的花卉能吸引很多天敵到農田去。

Natural enemies are common in the natural environment and organic farmers just need to know how to attract and keep the natural enemies in their system by providing environmental conditions conducive to their survival. Planting different species of flowering plants may attract many beneficial insects to the farm.



### 如何吸引天敵

#### How to attract natural enemies

- 混種不同的作物來增加生物多樣性  
Mixed cropping to increase biodiversity
- 種植不同開花期的植物來提供食物(花粉和花蜜)給益蟲  
Plant a variety of flowering plants with different flowering periods to provide food (pollen and nectar) for beneficial insects
- 開很多小花的蜜源植物如薄荷、小茴香、芫茜、馬纓丹、連生貴子、三葉草、蕎麥等都是好的選擇  
Flowering plants such as mint, dill, parsley, lantana, milkweed, clover, buckwheat are good choices
- 採用植物殘株覆蓋物及種一些多年生植物，為其提供棲身之處  
Use plant residue as mulching to provide a habitat for beneficial insects

