



# Nosema

## What is Nosema?

Nosema is a disease of honey bees caused by two species of microsporidian parasites (a type of spore forming fungus) called *Nosema apis* and *Nosema ceranae*. Both organisms affect the honey bee's digestive system causing a range of symptoms including dysentery. Infected bees usually have a shortened adult lifespan. Bees infected at a young age may not produce royal jelly (brood food) and tend to skip the brood rearing stage of their life, becoming forager bees at a young age.

## What should beekeepers look for?

Nosema is very difficult to identify because the symptoms are not specific to disease.

Symptoms are related to digestive system disturbances. They are more apparent when nutrition is poor and weather conditions are cold and wet. Sometimes, dysentery is observed, the lifespan of bees are reduced and the colony dwindles in late winter or early spring.

## What can it be confused with?

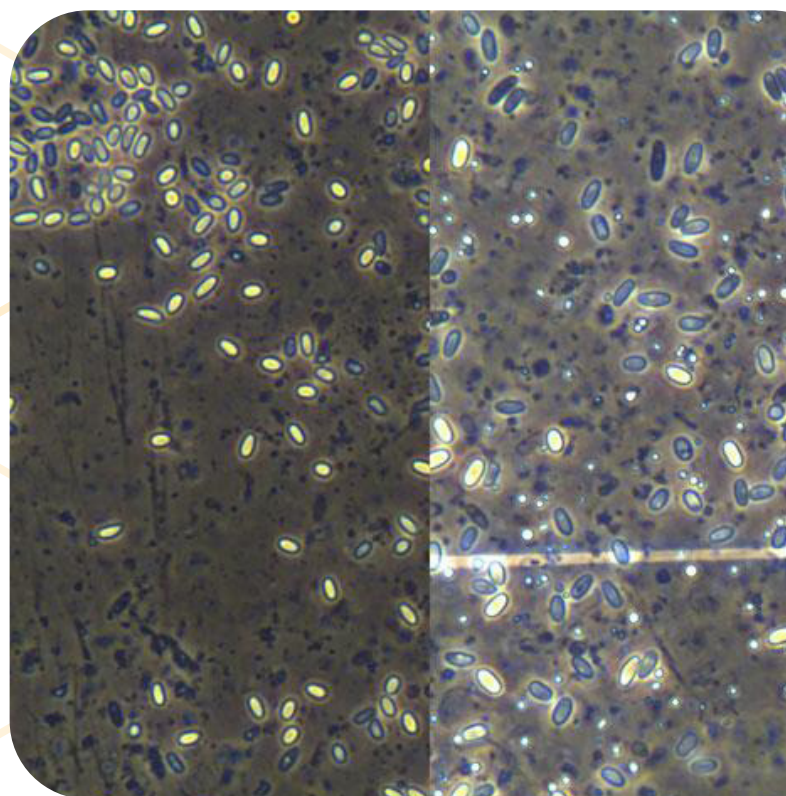
General symptoms associated with Nosema disease could be confused with other factors affecting honey bee colonies, such as lack of pollen or nectar, inappropriate pesticide use or various other pests or diseases. Unfortunately, field diagnosis using symptoms is not reliable or specific for Nosema disease. The disease can only be accurately diagnosed by laboratory examination of adult bees.

## How does it spread?

Robbing bees ingest spores and then take the infection back to their colony. The natural drifting behaviour of bees can also spread the disease between hives. If water and food sources become contaminated with faeces containing Nosema spores then any bees using that food or water source can also become infected and bring the disease back to their colony.

## Where is it now?

Both species of Nosema are found in all honey bee producing continents and in New Zealand.



Photos courtesy of Zachary Huang

## How can beekeepers protect their hives from Nosema?

Nosema can be managed by maintaining strong, healthy colonies and avoiding nutritional and thermal stress on the bees. These can be achieved by using good beekeeping practices such as providing enough nutrition, using young queen bees, and regularly replacing combs, e.g. every 3-4 years. Moving or inspecting hives during winter should be avoided.

## Further Reading

**BeeAware** (2021). Nosema. <https://beeaware.org.au/archive-pest/nosema/#ad-image-0>

**FAO** (2020). Good beekeeping practices: Practical manual on how to identify and control the main diseases of the honeybee (*Apis mellifera*). <http://www.fao.org/3/ca9182en/CA9182EN.pdf>