

## Bee Diseases

### Nosema,

(This is a currently non- notifiable disease)

Nosema is a disease of adult bees caused by a spore-forming protozoan (*Nosema apis*) that invades the digestive tracts of honey bee workers, queens, and drones. The spores of the *Nosema apis*, usually ingested with food or water by the adult bee, germinate and multiply within the lining of the midgut. Millions of spores are shed into the digestive tract and are passed in the faeces. Damage to the bees digestive tract produces dysentery and weakens the bees, shortening the productive life of the worker, and reducing its ability to produce brood food. This in turn affects brood production and colony development particularly in early season. Infected queens' egg production and life span are reduced, leading to supersedure. Infected workers, unlike healthy workers, may defecate in the hive. Diseased colonies usually have increased winter losses and decreased honey production.

**Note:** Nosema infections are frequently present in most apiaries at low levels without causing significant damage. It is aggravated by stress. Colony disturbance in winter as well as during summer increase the risk of detectable disease level.

### Recognition:



The presence of nosema disease is not usually recognised until most of the bees in the colony are infected since it does not produce signs or symptoms that are easily recognized under field conditions.

Defecation in the hive and signs of unusual faeces on hive parts can be tell tale signs. The only positive way of identifying the disease is through dissection of adult bees.

### Vectors

Nosema spores can exist in beekeeping equipment, honey, wax, etc. and will spread quickly during normal hive / colony manipulations.

- Beekeepers - Transferring contaminated equipment / material between hives, colonies and apiary sites.
- Crushed Bees - Bees will clean up any crushed bees during normal house keeping activities and can pick up and spread spores quickly through the colony.
- Robbing - Colonies weakened by Nosema will fall prey to robbing, transferring spores to other colonies and apiaries.
- Drifting - As with Robbing will transfer spores to other colonies.
- Swarming - Swarms can carry the spores with them to new sites where the disease will spread once new brood is produced.

**Note:** beekeepers are the principal and most rapid means of spreading Nosema disease.

## How to Manage Nosema

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### Detection

**Hive Examination** - Examination of hive components and debris is required especially in spring. Bees should be gently shaken from the frames to allow full inspection, abnormalities are then easily spotted.

### Monitoring

Vigilance is important with all honeybee diseases. Check all apiaries and colonies regularly for health and suspect any colonies that are not thriving where there is no already known reason. Colonies that die out should be examined thoroughly and sealed to prevent robbing and spread of any disease present.

### Controls

Transferring the infected colony on to clean comb and disinfecting comb and hives parts is recommended. Prevention is the best method of controlling this condition by maintaining healthy, strong and vigorous colonies that display good hygienic traits. Always ensure there is enough available food for the colony during periods of bad weather. Good husbandry contributes greatly to overall colony behaviour and health, thereby avoiding the conditions in which Nosema can occur. Fumidil 'B' can be used in spring and autumn to inhibit spore reproduction in the bee gut however it does not kill the spores. Sterilisation of contaminated equipment can be carried out by the Acetic acid sterilization process.

**Note:** Dead brood will be removed by bees from the cells as soon as the colony grows stronger and returns to normal.

### Apiary Housekeeping:

- Always maintain strong and vigorous colonies that show good hygienic tendencies, re-queen from known healthy disease resistant colonies.
- Always maintain a high level of hygiene in all your beekeeping practices
- Carry out methodical health inspections on a regular basis, checking for brood disease particularly in spring and autumn.
- Never transfer combs between colonies without checking for diseases
- Systematically replace old brood combs in your hives melting down the old comb to maintain clean and healthy brood.
- Never bring colonies or equipment into your apiary without establishing their origin, condition, and disease status.
- Sterilise any second hand equipment or hive components before introducing them into your apiary
- Discourage drifting and robbing in the apiary
- Suspect stray swarm health until you know otherwise
- Report any incidence of disease or suspicious conditions immediately to your local association