

Update of the Small Hive Beetle (SHB) Quarantine in Peace River Region, and Bee Health Evolving Issues

Peace Region SHB quarantine:

The order of establishing the quarantine zone was communicated to all beekeepers affected by the quarantine, Ag. fieldmen, First Nation settlements, and local municipalities in the region. A second inspection of bee colonies imported from Ontario to the Peace Region of Alberta began on Monday July 24th, 2017. After the inspection of 3 apiaries, one larva (suspected SHB) was found. The larva was sent the National Identification Service (Entomology), Agriculture and Agri-Food Canada for confirmation. Inspections were suspended on Tuesday July 25th, due to inclement weather, operational conflicts during honey flow at the affected apiaries, and issues with accommodation. Inspections are scheduled to resume during the 4th week of August.

On Friday August 12th, 2017 a potential case of SHB infestation was reported in apiaries in Beaverlodge, Alberta. The Bee Diagnostic Centre initially identified these beetles as SHB. However, further identification by the National Identification Service (Entomology), Agriculture and Agri-Food Canada confirmed that the specimen is not small hive beetle. What good news!!!

Reported unknown honey bee brood damage and bee population decline:

In late May a commercial beekeeper reported a suspected case of a bacterial infection with symptoms similar to European Foul brood (EFB). A recommendation was provided for the use of Oxy Tetracycline antibiotic treatment. The situation improved, but the beekeeper lost roughly 10-15% of the bee colonies. In mid-July another commercial beekeeper reported losing up to 15% of the colonies, mainly due to a decline in the bee populations and an outbreak of EFB-like symptoms during the honey flow season. A field examination on July 25th, 2017 confirmed the decline in bee populations and EFB-like symptoms in infected bee colonies. These symptoms have been reported in some hives in 11 commercial beekeeping operations, representing roughly 36,000 bee colonies, from the Peace River Region in Alberta.

Alberta Agriculture and Forestry (AF) has been investigating and following up this situation with all impacted beekeepers. From our investigation and discussion with the affected beekeepers it appears that:

- All affected beekeepers reporting these symptoms had overwintered their bees in BC. Most of the affected bees were used to provide pollination services in blueberries or stayed in BC during the blueberry pollination.
- Symptoms Include;
 - A sudden loss and decline in the bee population.
 - Bee larvae with bacterial like infection (i.e. EFB).
 - Beekeepers also observed that there was sometimes uneven distribution of healthy brood within the combs. One side of a brood comb appeared to have EFB-like symptoms, spotty brood, and few, if any, eggs. The other side of the same brood combs appeared healthy and normal.
 - 2-3 day old larvae pup up in the cell and becomes translucent, then yellowish and dry up.

- Beekeepers also reported that there was more than normal pollen stored in infected colonies, possibly as a result of the lack of the pollen being utilized to produce bees at this time of the year.
- The bee population in infected colonies has been continually declining and deteriorating, eventually leading to colony die off.
- The Bee Diagnostic Centre in Beaverlodge analyzed samples submitted by beekeepers. They confirmed the presence of EFB and Chalkbrood in affected brood combs.
- Current estimates indicate that up to 30% of the hives in these operations are impacted, up to 15% of the colonies are dead, and up to 15% are in various stages of infection and decline.
- An important note on fungicide exposure:
 - It appears that the bees were exposed to in-crop application of fungicides in B.C. High levels of fungal disease were reported in the early 2017 blueberry season during the period of time over which bees were providing pollination services.
 - In Alberta (Peace Region), bees were also exposed to fungicides used to control sclerotinia in canola.
 - Some crop producers may add boron to their fungicide to adjust for micronutrient deficiencies that impact mid to late season production, and while beekeepers reported boron/micronutrients used by farmers, this probably would not be the overarching cause of the current situation.
 - The real impact of fungicides and their relation to the appearance of these symptoms in bee colonies is unknown at this time. However, it appears that stress due to fungicide application(s) and/or a combination of other factors during bee foraging periods should be studied in greater detail.
 - The simultaneous occurrence of these events within the hives, leading to bee kill, is particularly concerning and warrants a thorough investigation.
- There have been a few similar cases reported in BC and Quebec. These bees were also placed in blueberry fields for crop pollination.
- Roughly 2000 bee colonies, from two Peace Region commercial bee operations were kept in Alberta over the winter. These bees did not exhibit any of the EFB-like symptoms, or decline in population, compared to bees from the same operation(s) that were overwintered in BC and which are exhibiting the EFB-like symptoms and the population decline.

Alberta Agriculture and Forestry is continuing the investigation. Understanding the stressors that could cause this outbreak of EFB-like symptoms and the associated impacts on bee colony survivorship and health is of utmost importance. For the meantime, beekeepers are advised to take colonies exhibiting these symptoms out of honey production and follow-up with treatment(s) of Oxy Tetracycline. Beekeepers must not use any antibiotics in their honey producing colonies at this time of the year, to avoid any risks of contaminating honey due to antibiotic use.

Friendly fall management tidbits:

- Monitor mite population(s) and treat as necessary to ensure that bees go to winter with less than 1% Varroa mite infestation.

- Due to drought in southern Alberta and early shut down of honey flow in many regions across Alberta, beekeepers might consider feeding a round or two of pollen supplement patties to ensure developing enough healthy bees for the winter.
- Monitor nosema levels in bees going into the winter and treat with fumagillin as needed.
- Ensure that there is enough healthy bee population and a queen in each wintering hive.
- If you plan to move bees to BC, Please contact as soon as possible Alexandra Panasiuk at 780-644-8746 to arrange for inspection.

For further information, please contact: **Dr. Medhat Nasr, Provincial Apiculturist (780-415-2314, Medhat.nasr@gov.ab.ca)**