

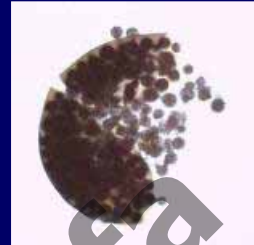
Chalkbrood Control in the Alfalfa Leafcutting Bee

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Chalkbrood



- Most serious disease in alfalfa leafcutting bee
15% loss average
- *Ascosphaera aggregata*
- Disease not only in leafcutting bees, but some other bees. **More?**

Drilled Boards vs. Loose Cell Systems



Why does chalkbrood occur less frequently in Canada than the US?



6 Hypotheses

Hypothesis 1: Management practices differ between Canada and U.S.



Canadian Grower Practices

- Use of lower numbers of bees per acre
- No irrigation and short cool summers
- Could be a combination of weather, planting rates, timing, irrigation, bee release methods.

Canadian Grower Practices

- Higher bee release rates lower bee health
- Crowding of bees at shelters increases chalkbrood



Hypothesis 2: Treating loose cells with paraformaldehyde

- Canadian growers treat bees, not just nesting boards with paraformaldehyde gas
- Bee Lab researching safer alternatives



Hypothesis 3: Cold Canadian winters prohibit development of wild bee populations

What is the natural spore reservoir in U.S. managed bee systems?



Hypothesis 4: Cooler summers in
Canada inhibits chalkbrood
development

BUT...

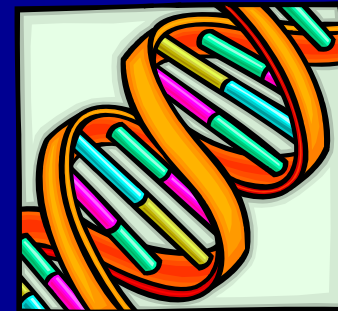
Lab studies show that cooler
temperatures actually make the bees
more susceptible to chalkbrood
infection.

Hypothesis 5: Disease spread increases with second generation



Hypothesis 6: Less chalkbrood resistance in Canadian bees

- Bees from Canada are not genetically adapted to resist infections
- When the bees are brought to high chalkbrood areas (like the U.S.) they have a high incidence of disease.



Summary of Hypotheses

1. Farm & bee management practices?
2. Use of paraformaldehyde gas in Canada?
3. Cold winters in Canada?
4. Cooler Canadian summers probably not a factor
5. Disease spread not greatly increased with 2nd generation
6. Less chalkbrood resistance in Canadian bees?