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.
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?