Spring Management Considerations for Maritime Beekeepers

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NSDA/NSBA 3rd Annual Joint Symposium

ATTTA

Feb 21 2020

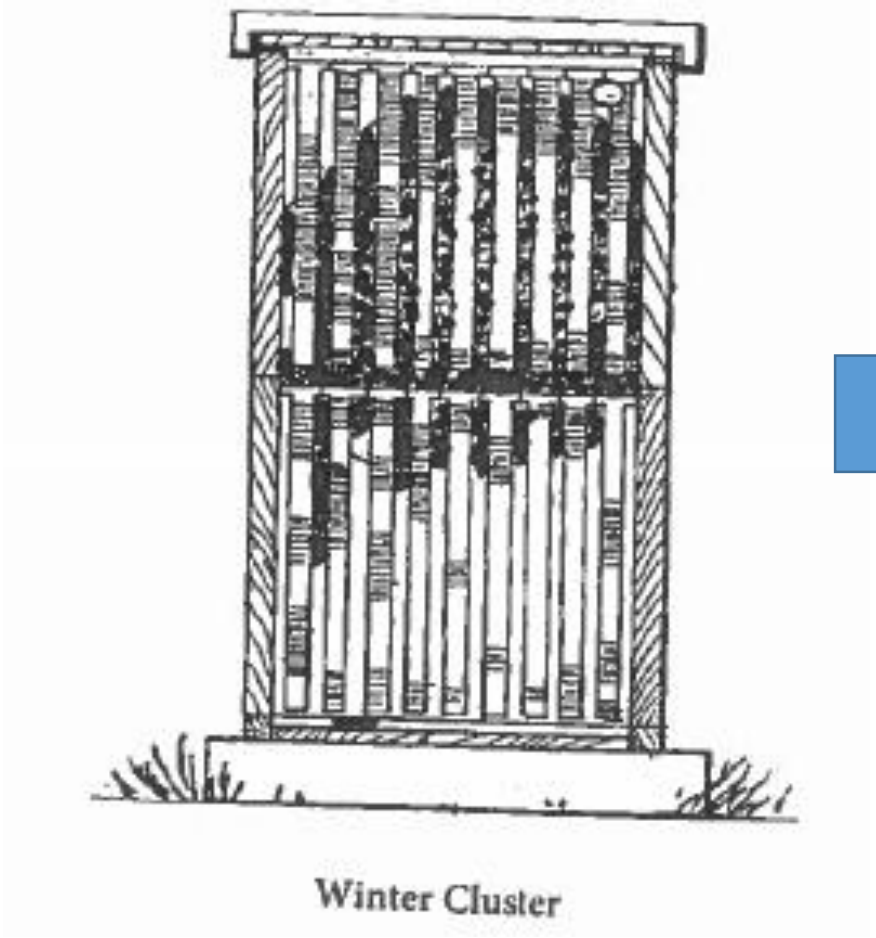
Spring management begins in the fall!

- The quality of late summer/fall management will influence the strength of your colonies next spring

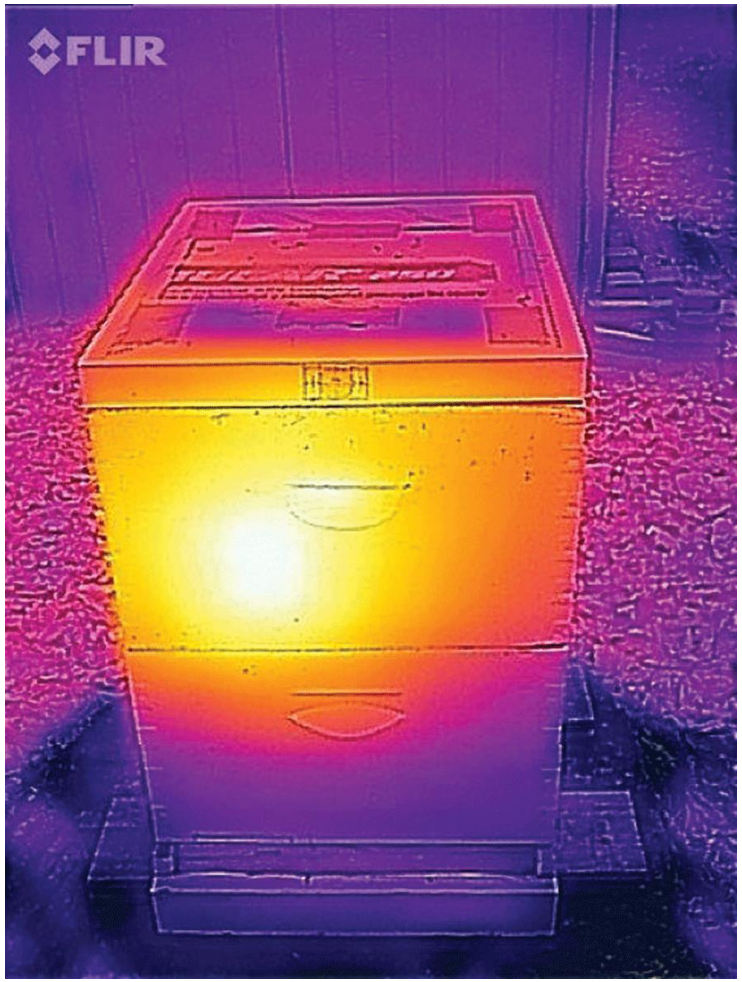
- Things to consider:
  - Adequate resources and space to lay
    - Particularly August - September
  - Pest and disease management
  - Colony size
  - Honey harvest
  - Fall feeding
  - Proper wintering techniques

Winter months: Leave them alone!

Winter cluster progression



Beekeepers Handbook



http://www.beeculture.com/winter-management/

First spring hive inspections – mid-late March or April

- Depends on weather and location
- Okay to sneak a peek above 0 degrees, but do not pull frames.
  - Keep inspections as short and inconspicuous as possible
- Many beekeepers crack lids mid-late March to feed pollen patty and apply synthetic mite strips – not all
- Quickly peer in hives to assess feed stores
  - Emergency feed if necessary
- Do not open hives in the spring without a purpose or a plan!

Early spring inspections

What are the bees doing in March?

- Increasing day length and temperature jump starts brood rearing
- Bees will begin rearing brood without beekeeper intervention if bees are properly nourished from the fall before
  - Protein stored in bees, and in pollen
- Bees consume more honey as brood rearing commences

March 29, 2019

What is the beekeeper doing in March?

- Start spring feeding by the end of the month (3 weeks before the first pollen flow)
- Perhaps mite treatment?
- Clean up dead outs
- Quick inspections
- Emergency feed if necessary

Are your hives hungry?

- Are there adequate food stores for March and April?

- How can you tell?

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- Are there adequate food stores for March and April
- How can you tell?

What do you do if their cupboards are bare?

- Emergency feed fondant or dry sugar
- Not ideal, but works in a pinch!

https://www.countryfields.ca/products/fondant

Spring varroa management – think ahead! Timing is important!

- Plan what product you will use ahead of time

- Consider application time, withdrawal period, and conditions of use
  - eg: Apivar is a 6-8 week application, 2 week withdrawal period
  - Apivar and many other products can **NOT** be used with honey supers on
  - Use once in 12 month period

- Plan your treatment according to timing, anticipated honey flows, and infestation levels

Working bees early spring: Wear a hat, zip your veil!

All hives are different in the spring!

Looks Good!

Average

A Little Small

All hives are different in the spring!

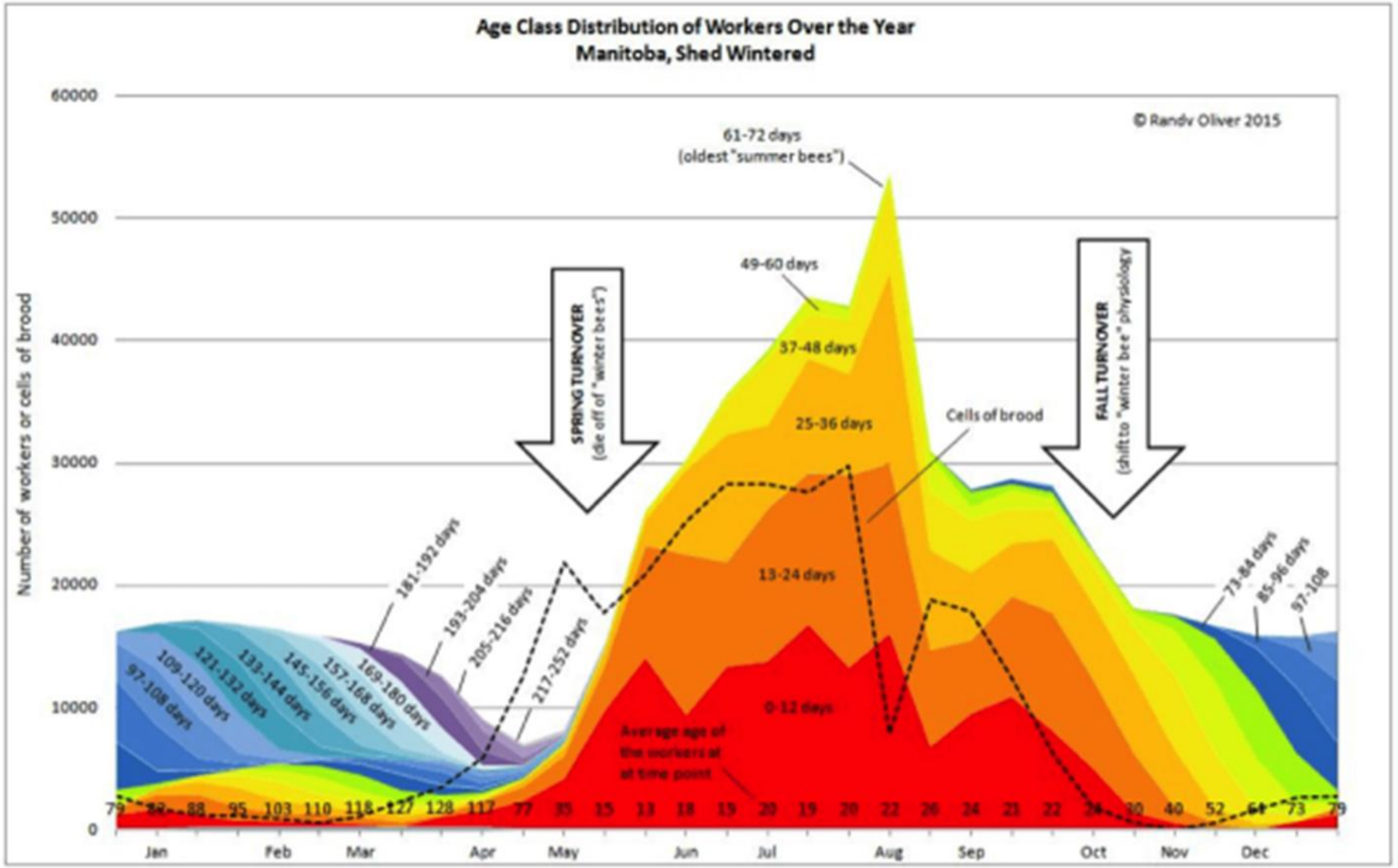
For colonies that are alive but "weak"	For colonies that are alive & "normal"	For colonies that are alive & "strong"
• reduce to a single brood chamber • close off the top entrance • move cluster frames to the middle of the box • move distant honey frames closer to cluster • leave entrance reducer in place boost population by donating nurse bees • OR, combine with another colony	• reverse brood chambers • check the brood for disease, laying pattern • move feed frames closer to cluster • individually feed colony if stores are low • close off top entrance to prevent robbing	• reverse brood chambers • remove capped brood frames/honey frames if queen needs space to lay • exchange "strong" colony's spot with a "weak" colony • don't feed syrup or pollen unless absolutely necessary, • put on honey supers if early flows happens • remove bees and brood for splits and nucs if queens are available

Table adapted from: Ontario Tec Transfer Team publication:
http://www.ontariobee.com/sites/ontariobee.com/files/document/Spring%20Colony%20Management%20web.pdf

This is what we like to see! Late March 2019.

Watch closely for starvation!

Beekeeper intervention can help insure a smooth transition during spring turnover



Tips for Successful Spring Turnover

- Overwinter strong, healthy colonies with productive, young queens
- Pest and disease management
- Ensure adequate food stores
- Choose good overwintering yards
  - Warm, sheltered, lots of sun exposure
- Manage weak hives in the spring
  - Place on top of strong hive, or combine with newspaper
  - Boost from donated resource
- **Spring feeding!**

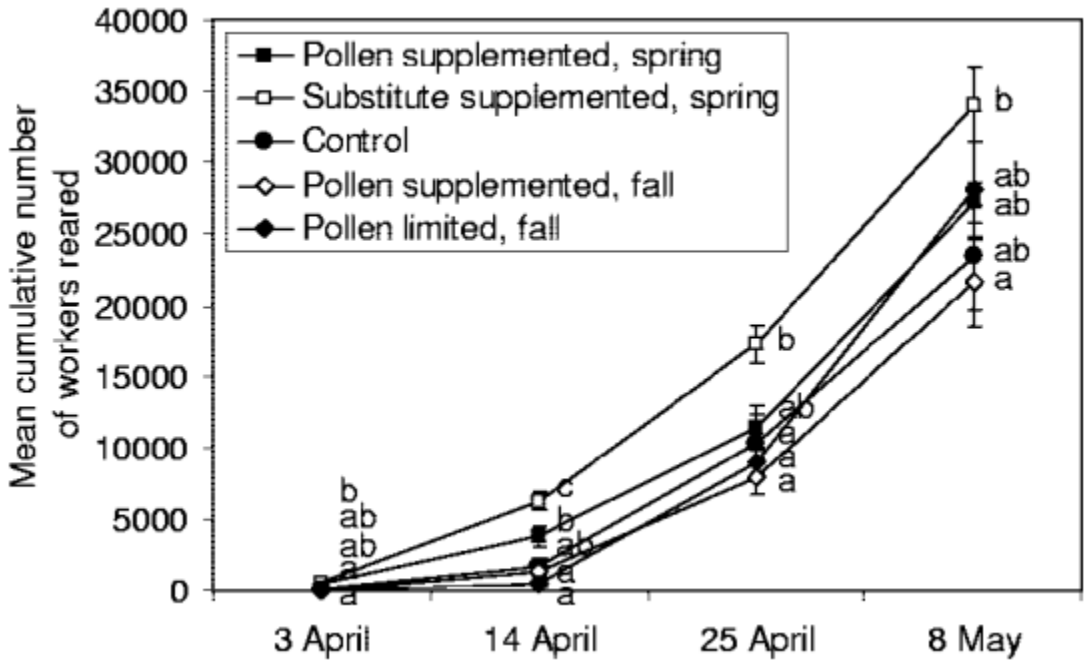
Stimulative feeding – Protein patties

- Pollen patties provide a protein source when natural pollen is unavailable, or inaccessible
- Pollen patties can tell us what is going on in a hive
- Why do we feed protein?

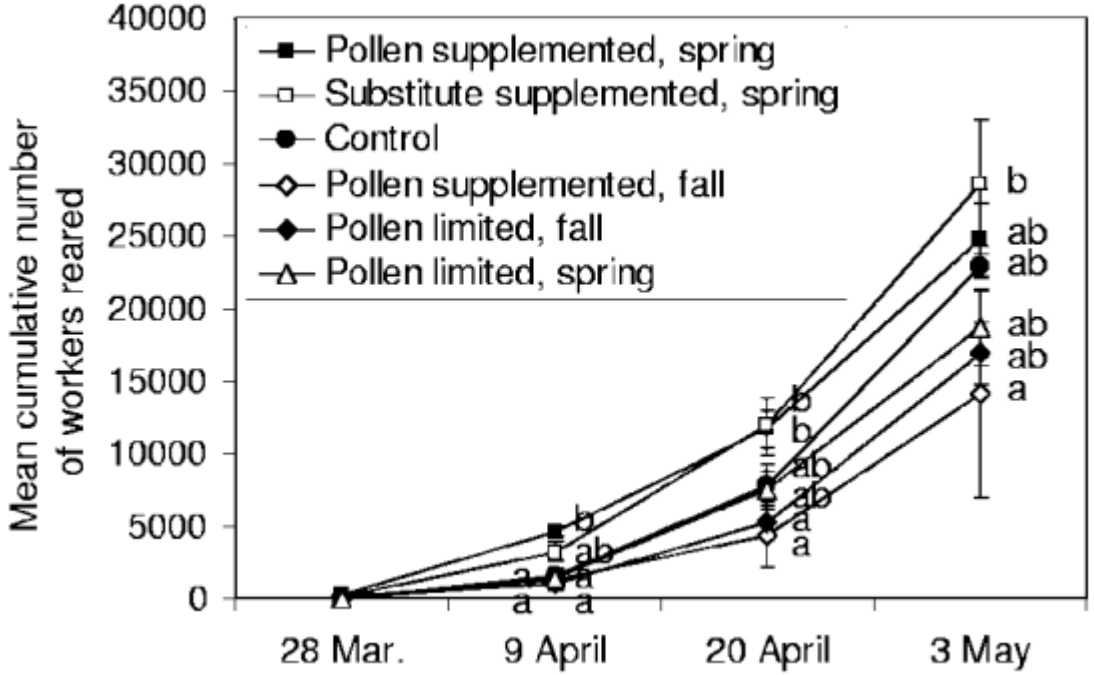
Stimulative feeding – Sugar syrup

- Flashing thin syrup stimulates brood rearing
- Also can be used to boost colony weight
  - Bees will not rear brood with limited available food
- Mid- late April (once they can take it)

Why feed in the spring – colony growth



2002



2003

Pollen substitute and supplemented colonies started to rear brood earlier, and resulted in a higher adult bee population than pollen limited colonies, or control colonies.

Mattila, H. R., & Otis, G. W. (2006). Influence of pollen diet in spring on development of honey bee (Hymenoptera: Apidae) colonies. Journal of economic entomology, 99(3), 604-613.

Why feed in the spring – drone quality

Table 2. Mean semen volume, sperm count per ml, sperm count per drone, and percentage of sperm viability of *A. mellifera* drones in various experimental groups

Variable	Treatment				*F*	df	*P*
	Control	Syrup	Protein	Syrup + protein			
Semen volume (μl)	1.09 ± 0.03a	1.25 ± 0.02b	1.25 ± 0.03b	1.23 ± 0.02b	6.26	3, 112	<0.0001
Sperm count/ml ($\times 10^9$)							
Sperm count per drone ($\times 10^6$)							
Viability %	79.73 ± 0.95a	80.63 ± 0.40ab	81.33 ± 0.55ab	82.93 ± 0.45b	3.68	3, 112	0.01432

Values are means of all semen pools (five drones) for each treatment ± standard errors; different letters within a line indicate significant difference (Tukey's honestly significant difference test at level 0.05).

Rousseau, A., & Giovenazzo, P. (2016). Optimizing drone fertility with spring nutritional supplements to honey bee (Hymenoptera: Apidae) colonies. Journal of economic entomology, 109(3), 1009-1014.

Why feed in the spring – a cheap insurance policy against Maritime weather!

- Maritime springs are cold and wet with limited flying days
- Early forage may be available, but the weather may limit bees access
- Once bees begin rearing brood they should not stop

Why feed in the spring – for early splits or nucs – **help recover winter loss**

Why feed in the spring – preparing for pollination or honey flow

To play devil's advocate: bee longevity

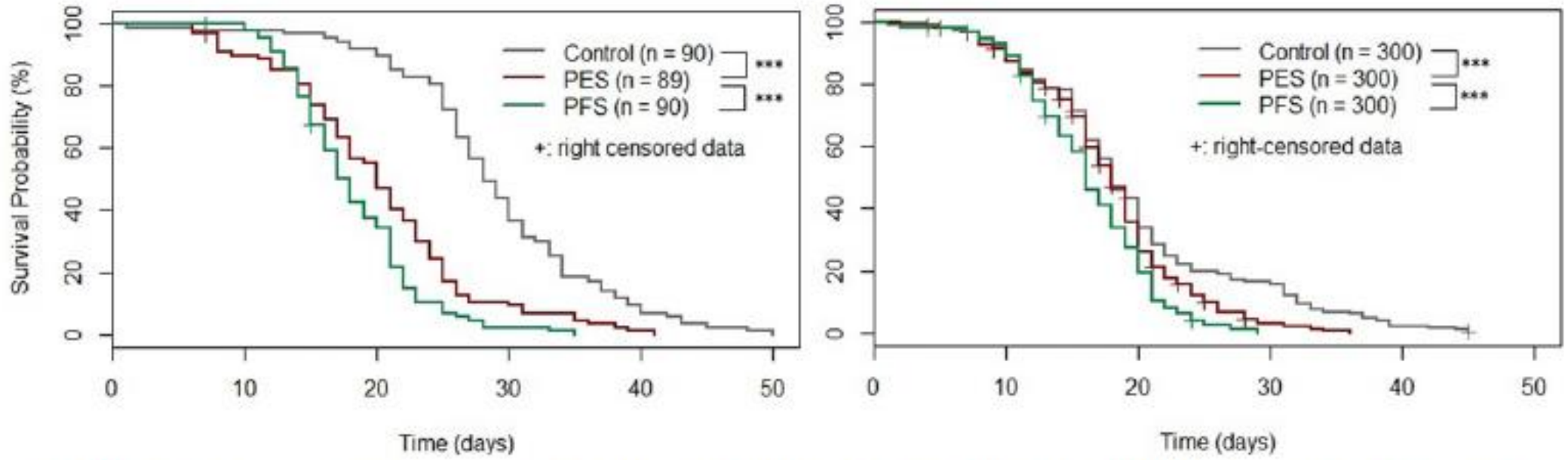
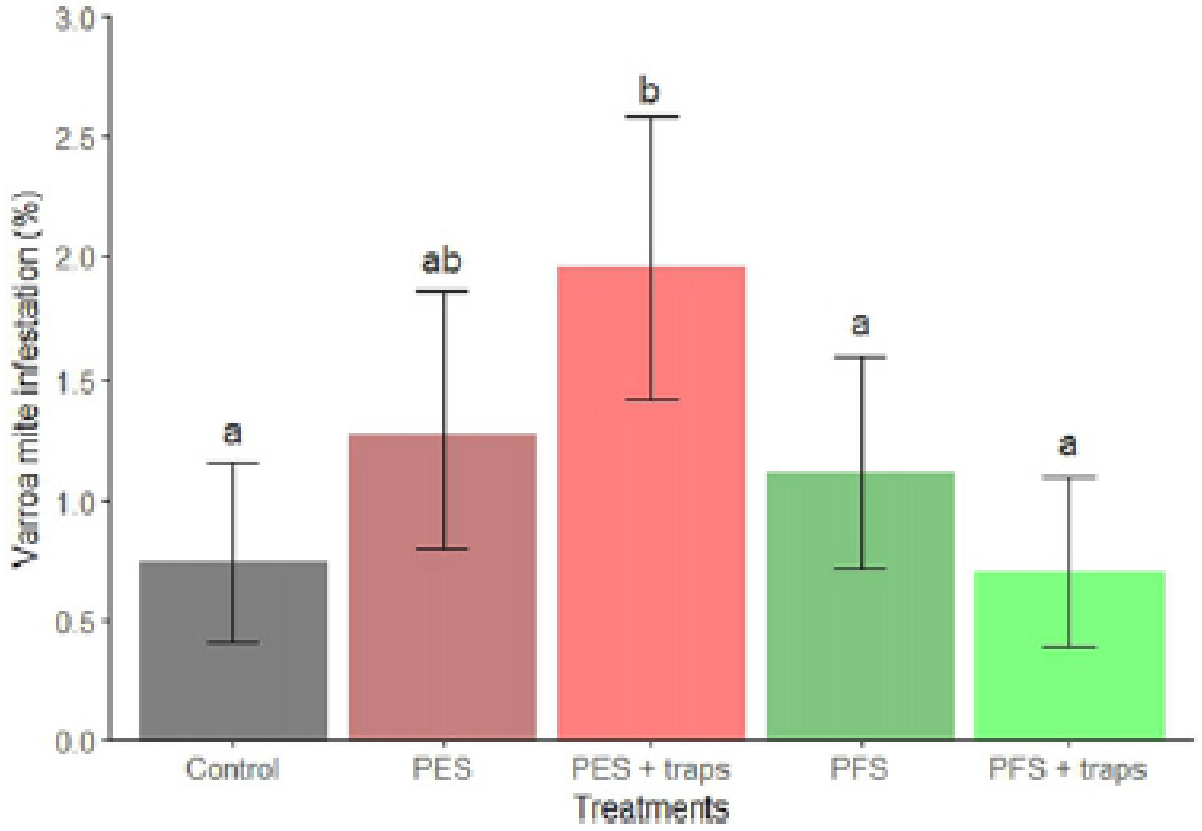


Figure 5. Kaplan-Meier curves for honey bee survival in (left) 2016 and (right) 2017. In both 2016 and 2017, the honey bees from unsupplemented colonies lived longer than honey bees from colonies fed the pollen-enriched supplement (PES) (2016: $p = 5.2e-12$, 2017: $p = 0.0091$), which lived longer than honey bees from colonies fed the pollen-free supplement (PFS) (2016: $p = 0.0049$, 2017: $p = 0.0018$). In 2016, about 90 honey bees were used for each treatment, and 300 were used for each treatment in 2017.

Lamontagne-Drolet, M., Samson-Robert, O., Giovenazzo, P., & Fournier, V. (2019). The Impacts of Two Protein Supplements on Commercial Honey Bee (Apis mellifera L.) Colonies. Journal of Apicultural Research, 58(5), 800-813.

To play devil's advocate: Varroa infestation



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To play devil's advocate: swarming and "honey bound" hives

What are the bees doing in April?

- Bees are raising brood and building population
- Some early pollen is available by mid-late April
- Bees begin rearing brood fast with the first natural pollen
- Bees consuming pollen patty when they are unable to gather pollen

April 21, 2019

What is the beekeeper doing in April?

- Continuing spring feeding – April is typically wet with limited flying weather
- First major hive inspections
- Unwrap bees by the end of the month

Unwrapping

- Typically end of April
- Wrap helps with early brood rearing
- Unwrap when the night temp is consistently above 0 degrees

Benefits of wrapping

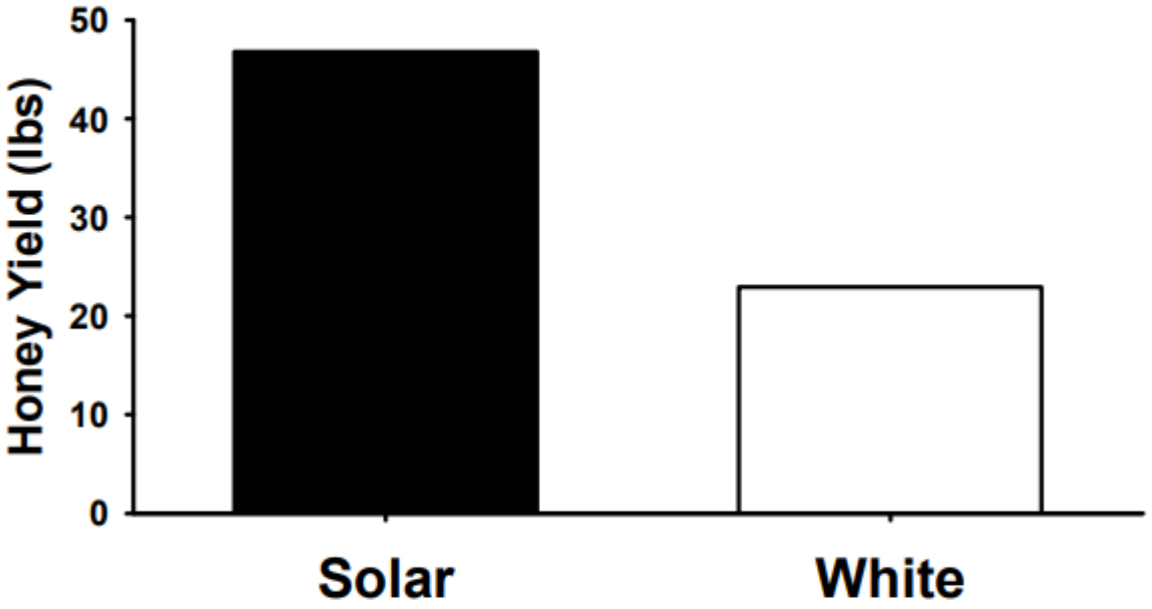


Figure 8. The amount of honey collected from colonies in Israel during the earliest honey flow (March) if they were painted white or enveloped in a black plastic tent (solar) (Wineman et al 2003).

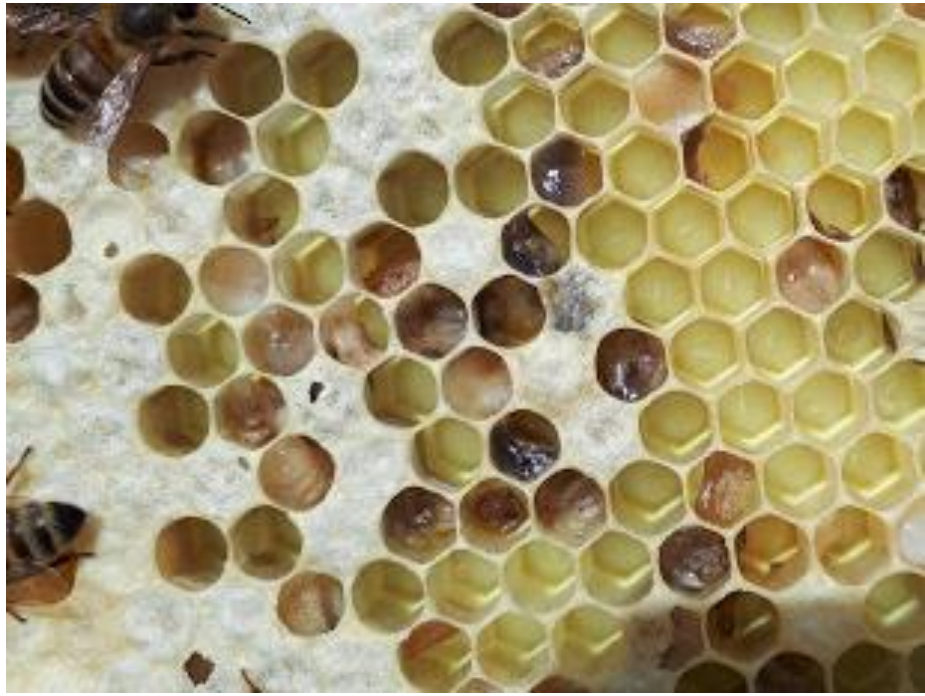
Wineman et al. 2003 as cited in Melathopoulos 2007

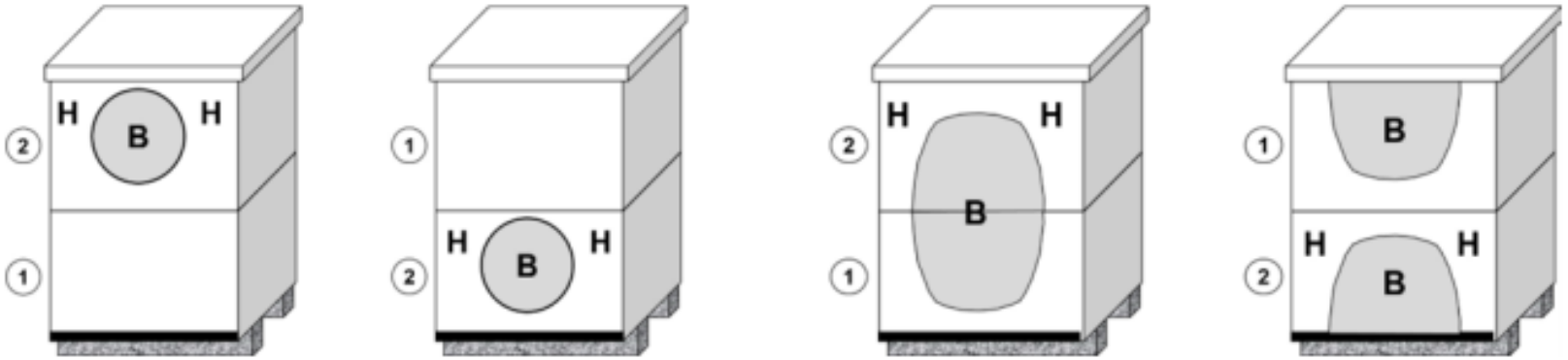
"A study from Israel, for example, demonstrated that colonies that were enclosed in a black plastic tent achieved brood rearing temperatures a month earlier than colonies painted white, and as a consequence, were able to double their honey production during the first honey flow"

- (Melathopoulos 2007)

To reverse or not to reverse?

- Advantageous if done successful
  - Swarm management, spring buildup
- Harmful if done wrong, too early, or before last temperature dip
  - Chalk brood, chilled brood, added stress of thermoregulating “two” brood nests





A. Correct reversal of hive bodies.

B. Incorrect reversal of hive bodies.

https://extension.msstate.edu/sites/default/files/publications/publications/p2941.pdf

Scrape bottom boards, remove dead outs from yard and sort through frames

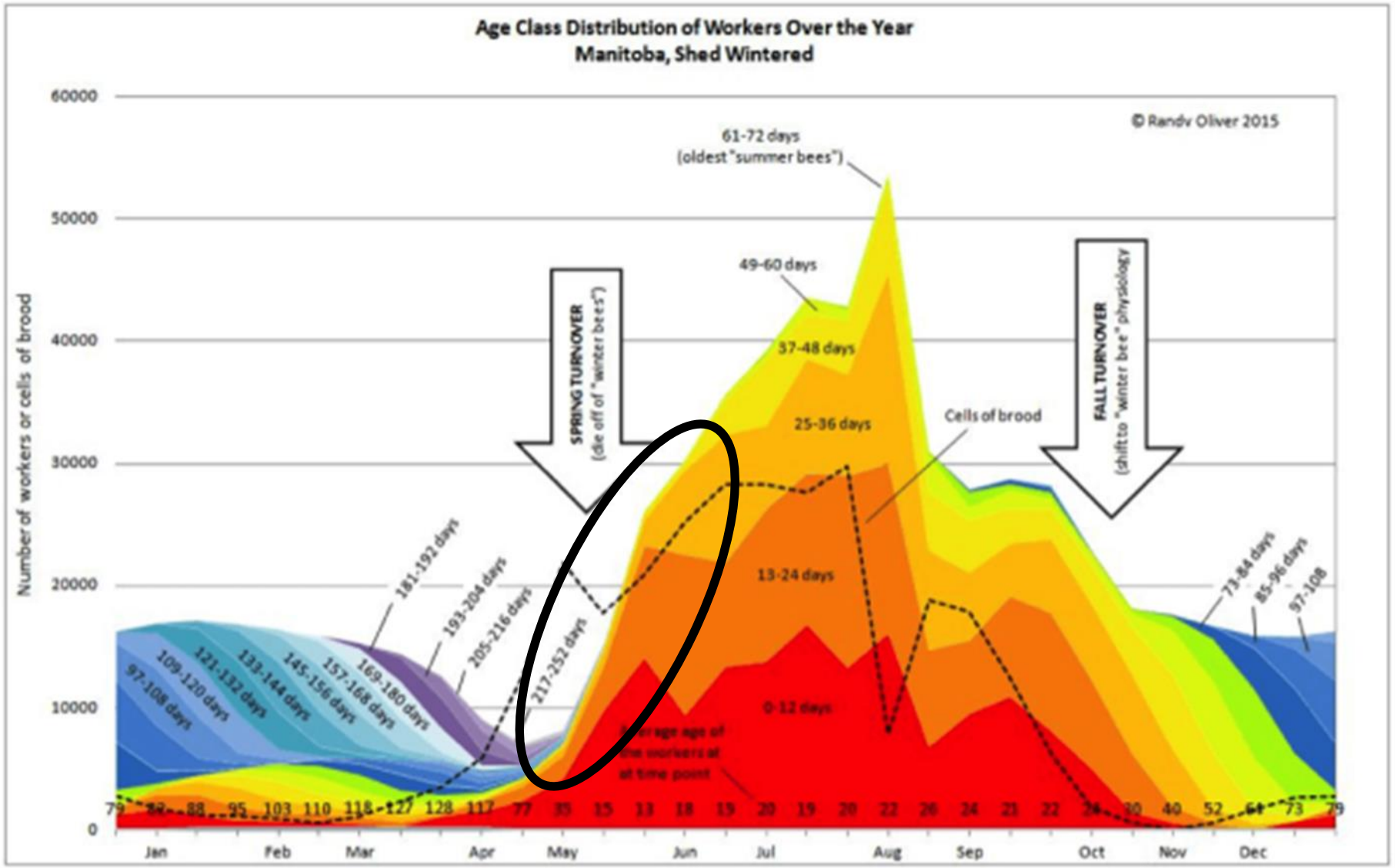
What are the bees doing in May?

- Collecting available early pollen and nectar
- Bees are in their linear growth phase. Swarming by the end of the month
- First surplus nectar flow by the end of the month

Top

Bottom

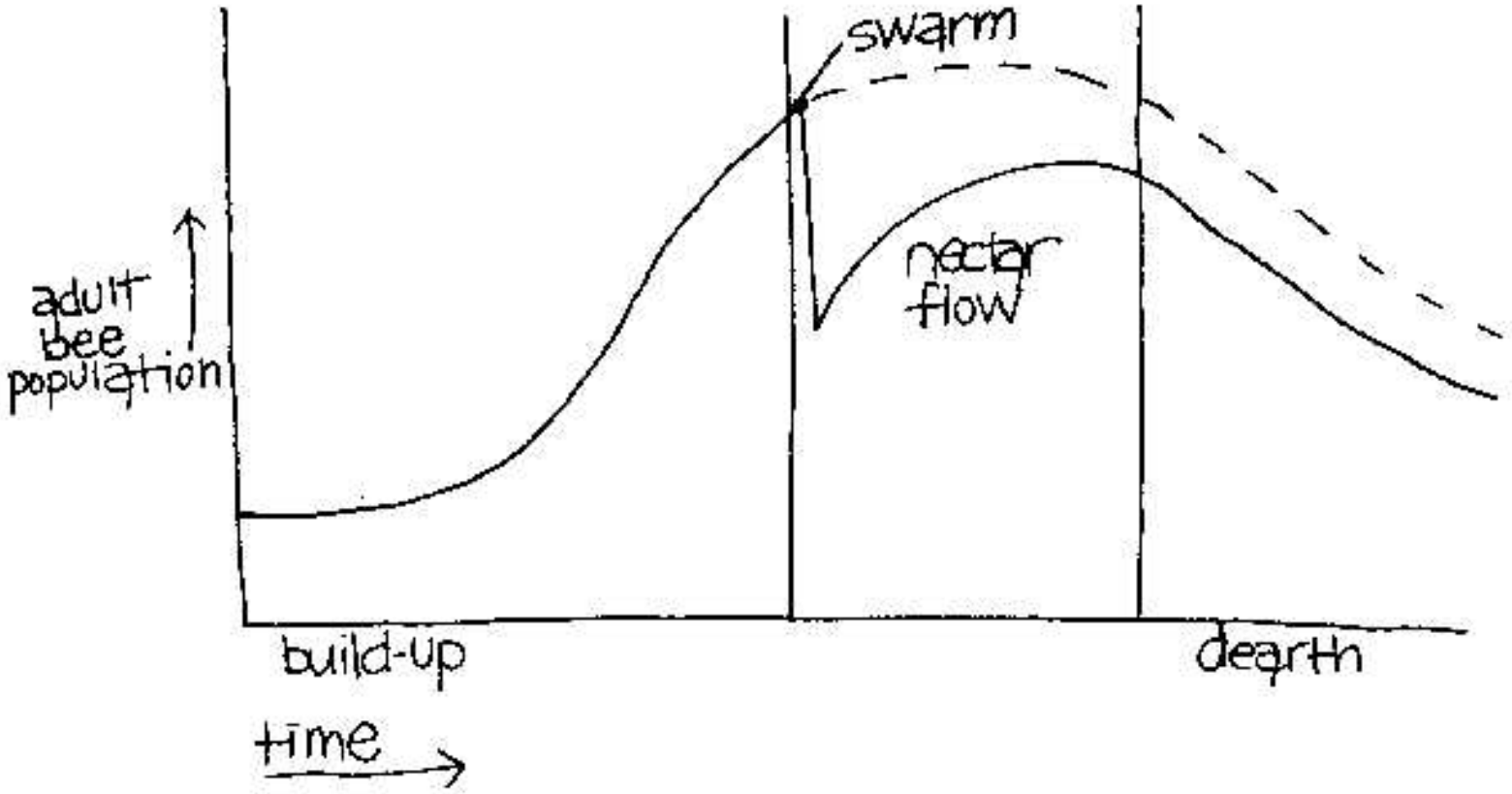
May – linear growth phase



What is the beekeeper doing in May?

- Monitor for mites, treat if necessary
- Splitting hives to increase colony numbers and to reduce swarm pressure
- Hives will be sent to for blueberry pollination by the end of the month
- Adding supers to collect nectar and reduce congestion in the brood nest
- By the end of May, most hives will have spring treatments done and feeding will stop

Swarm control is a key component of spring management – See ATTTA presentation Saturday morning for more information!



http://www3.telus.net/conrad/4.htm

June – end of spring management, start of summer management

- Quality of spring management will be seen in late May and continuing into summer months
  - Goal is strong, populous colonies
  - Meeting or exceeding pollination standard
  - Full of bees ready to collect a honey crop
- April and May are the beekeepers make it or break it months. Any serious mistakes can result in fewer hives available for pollination, or a smaller honey crop
- Quality spring management prepares colonies for a successful summer

THE MODERN BEEKEEPER

2020 Dates

Module 1: **April 4-5**

Module 2: **May 2-3**

Module 3: **June 27-28**

Module 4: **September 12-13**

https://childcarebumblebee.com/questions/

If you would like a copy of this presentation, please email Sawyer or Robyn, or check the NSBA website!

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http://www.nsbeekeepers.ca/industry_news.php