Apple Pollination

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Unloading beehives in the Fraser Valley, British Columbia, Canada

Introduction

- The purpose of this presentation;
  - Highlight the importance of pollination
  - Increase awareness amongst beekeepers and farmers about the importance of:
    - 1. Brood production for the best pollination result
    - 2. Reducing competing floral resources

Introduction

- Many fruit and vegetables depend on pollinators, especially the European honeybee (apis melifera)

- Any Agricultural production that depends on pollination requires knowledge about the relationship between the plant and the pollinator.
  - Examples:
    - 1. Kiwi fruit, separate sexes in separate plants
    - 2. Cucumbers, females bloom two weeks sooner than males
    - 3. Cranberries, flowers point down requiring a pollen carrier
    - 4. Sunflowers, almonds and apples self pollination is very low

The Value of Pollination

- Honeybee pollination is responsible for 90% of the apple crop
- Pollination cost is 1-2% of gross farm income making pollination extremely good value for money

Proper Pollination

Properly pollinated apples will contain 6 seeds or more

Incomplete Pollination

Left: Properly pollinated apple. Right: Incomplete pollination, apple shrunken on one side

Incomplete Pollination

Incomplete Pollination

The shrunken side of the fruit is seedless

Stocking Rates

- 3 hives per acre where there is no competing floral resource
- 5 hives per acre in the presence of competing floral resources will still only be 75% effective

Hive Management

- Colonies managed in double brood chambers, excluder and 1 super
- This gives maximum room for brood production and pollen storage
- Minimum 10 frame population

Negative Effects on Pollination

- Rain and cold temperatures
- More attractive floral resources within bee flight (especially dandelions)
- Unhealthy colonies
- Protein deficient colonies

Positive Effects on Pollination

- Reducing competing floral resources
- Healthy hives
- High body protein bees
- Hive management
- Feeding Caspian Solution

Caspian Solution

- Contains
  - Queen pheromone
  - Drone pheromone
  - Larvae pheremone
  - Royal Jelly
  - Pollen
  - Honey

  - Can be medicated for AFB, EFB, Nosema, Amoeba/Protozoa

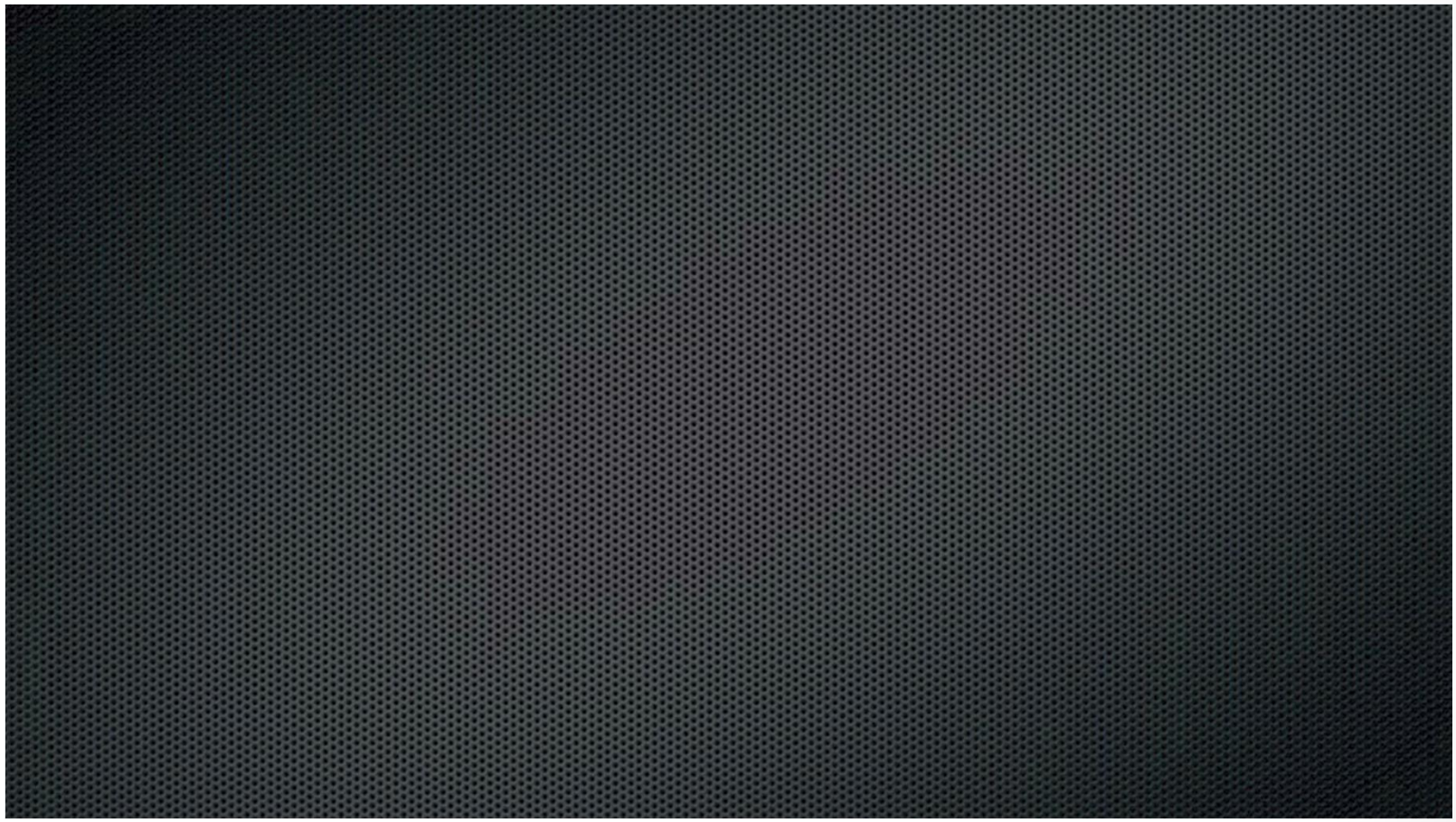
Feeding Caspian Solution

- Pollen collection (and therefore pollination) depends on brood production
- Caspian Solution stimulates bees to consume extraordinary amounts of pollen, stimulating brood production and pollen collection

Feeding Caspian Solution

- Benefits for the apiarist and for pollination:
  - Maximum pollen consumption
  - Maximum body protein levels
  - Increase in worker and royal jelly production
  - Highly fed larvae
  - Increase in brood production
  - Longer lasting, stronger bees

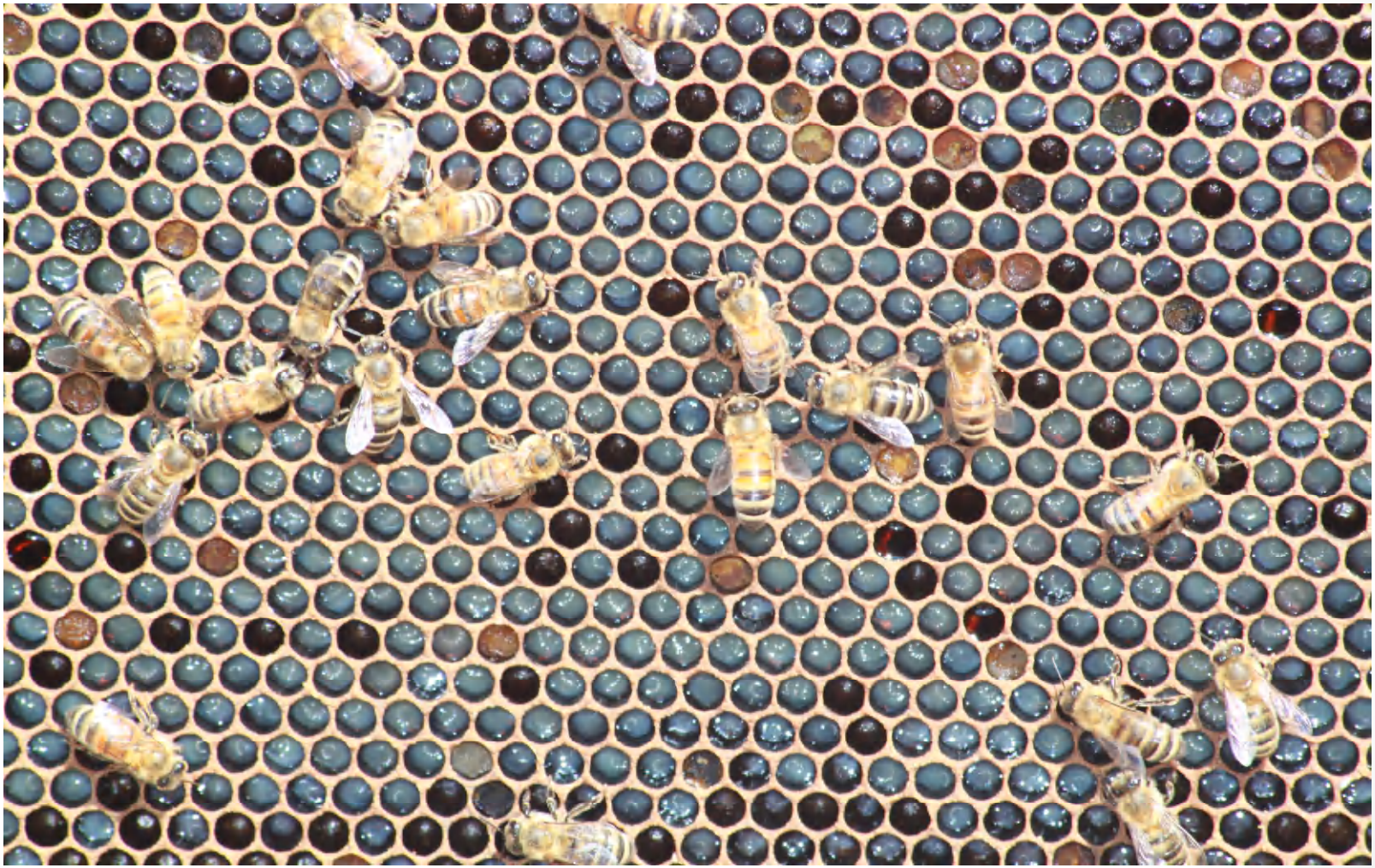
Maximum Pollen Consumption



Maximum Body Protein

Abdomons as wide or wider than thorax showing maximum body protein

Maximum Jelly Production

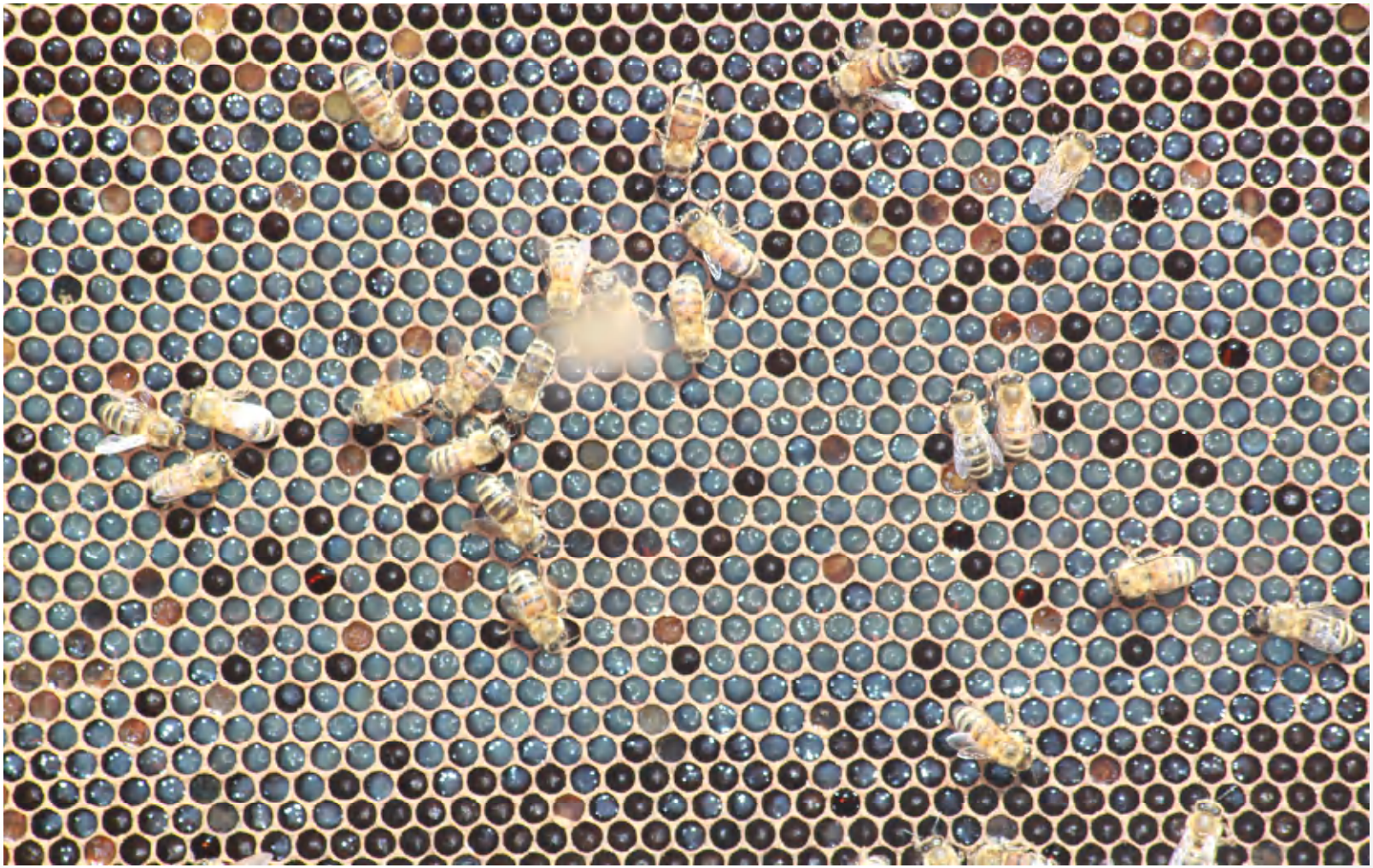


Typical jelly production from New Zealand package bees (3 frame nuc) when fed with Caspian Solution in the presence of pollen and nectar

Maximum Jelly Production

Maximum Jelly Production

Maximum Jelly Production



Maximum Brood Production

Brood production possible with
Bees stimulated to consume
Pollen by Caspian Solution

Conclusion

- Experience shows pollination results depend on two main factors
  - 1. Brood production
  - 2. Reducing competing floral resources

- Effective pollination requires brood production

Conclusion

- Caspian Solution stimulates pollen consumption and therefore pollen collection

- Brood production can be increased to very high levels with the use of Caspian Solution in the presence of pollen and nectar (or syrup), providing a better result for apiarists and farmers