NATURAL BEEKEEPING

MANAGEMENT PRACTICES THAT COMPLEMENT THE COLONY AS A SUPERORGANISM

STANDARD PRACTICES

MITE TREATMENTS- USE CHEMICALS SEVERAL TIMES PER YEAR

FEED SUGAR- FEED DURING DEARTH, WINTER, ETC.

HONEY PRODUCTION- EARLY SUMMER EXTRACTION

MAKING INCREASES - PRE FLOW, POST EXTRACTION, FALL

WHAT DO COLONIES DO?

THEY COLLECT RESOURCES TO:

LIVE (SURVIVE ON THE INDIVIDUAL LEVEL)

GROW (COLONY POPULATION INCREASES)

INCREASE (COLONY DIVIDES)

MY CURRENT PRACTICES

FEEDING- NONE (LET THE BEES KEEP TIL SPRING)

CHEMICALS- NONE (BREAKS IN BROOD)

INCREASES- SPRING (simulated swarms)

EXTRACTION- SPRING

SPRING PROCEDURES: extraction

PROS

SAVE WORK AND MONEY NOT FEEDING

MORE NUTRITIOUS FOR THE BEES

NO GUESSING HOW MUCH TO LEAVE THE BEES (TRULY SURPLUS)

NO NEED TO STORE COMB

NO ROBBING

NO WORKING IN EXCESSIVE HEAT

EARLIER CROP

Spring procedure: DE QUEENING

PROS:

- **KNOCK DOWN MITES WITHOUT CHEMICALS**
- **RAISE QUEEN CELLS FOR INCREASES**
- **PREVENT SWARMING**
- **QUEEN CAN REMAIN IN THE YARD**
- **HAVE EMERGENCY QUEENS AVAILABLE**
- **QUEEN SPLIT GROWS WITH THE FLOW**

OTHER MITE CONTROL PRACTICES

USE HYGIENIC STOCK

FREEZE WORKER BROOD

DRONE TRAPPING

*****THESE PRACTICES CAN BE APPLIED ANY TIME OF YEAR REGARDLESS OF HONEY FLOW AND TEMPERATURE CONSTRAINTS.**

****** DO MITE COUNTS!!!**

BONUS- ***EASY TESTING METHOD***

FALL MITE COUNTS

TOTAL COLONIES = 74

50% AT OR BELOW ECONOMIC THRESHOLD (0-3)

36% JUST OVER ECONOMIC THRESHOLD (4-7)

14% outliers (8-30)

CHANGING GEARS- QUESTIONS?

DARWINIAN BLACK BOX PROJECT

A NEGATIVE SELECTION BREEDING PROJECT

The Darwinian Black Bee Box

Authors:
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Published May 16, 2019

Abstract:

- Targeted breeding has failed
- Natural selection has succeeded (7 x)
- Within population mating
- No treatments
- Selection based on-
  - Survival
  - Proliferous development

Leading to locally adapted, varroa resistant populations.

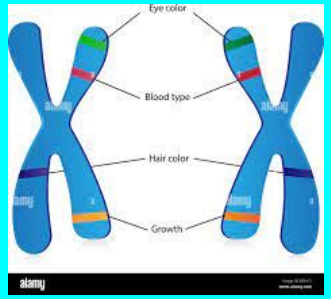
NEGATIVE vs. POSITIVE SELECTION

NEGATIVE SELECTION- REMOVAL OF ALLELES THAT ARE DELETERIOUS TO THE SURVIVAL OF THE ORGANISM.

POSITIVE SELECTION- SELECTIVELY BREEDING FOR CERTAIN TRAITS.

Black Box Analogy:

alleles are all mixed together (not pre selected traits)



Increased f<u>unctional</u> diversity- resistance to yeasts, fungi,viruses, mites, etc. Influences development of less virulent host/parasite relationships.

EXAMPLES OF HYPERSPEED EVOLUTION

- **CLIFF SWALLOWS- SHORTER WINGS INCREASED MANEUVERABILITY**
- **ELEPHANTS - BECOMING TUSKLESS**

Advantages:

- Fast and Easy
- Inexpensive
- May uncover traits that lead to resistance

    Inclusive natural selection may uncover rare alleles that are beneficial to increased genetic diversity and survival.

    (Delaplane et al. 2015)

ULTIMATE OBJECTIVES

- **DEVELOP A POPULATION OF LOCALLY ADAPTED HONEYBEES THAT:**
  - THRIVE ON THE AVAILABLE FLORAL SOURCES OF THE AREA(climate change)
  - ARE IN SYNC WITH THE SEASONAL FLOWS (7a)now (7b)
  - BECOME RESISTANT TO THE VARIOUS VIRUSES, PESTS, AND DISEASES THAT THREATEN THE HONEYBEE POPULATIONS
  - SUSTAIN POPULATIONS WITHOUT CHEMICAL TREATMENTS

- **PROVIDE A BREEDING POPULATION THAT WOULD BE AVAILABLE FOR BEEKEEPERS TO USE AS MATING YARDS FOR THEIR VIRGIN QUEENS**

QUESTIONS?