# Towards Natural Beekeeping with Warré Hives

And a treatment free apiary…

# What Style of Beekeeping?

Solange and our Mamaki Farm drench free/treatment free cows. Can we do this with Bees?

# Appropriate Methodology for our Farm

- Industrialisation of Beekeeping is bad for Bees
- Type of hive may have an impact on Bee health
- Type of Bee can make a difference.
- The Locality and the immediate environment impacts
- And Bee Husbandry / management systems can be a make or break for Bee survival

# Types of Hives Considered

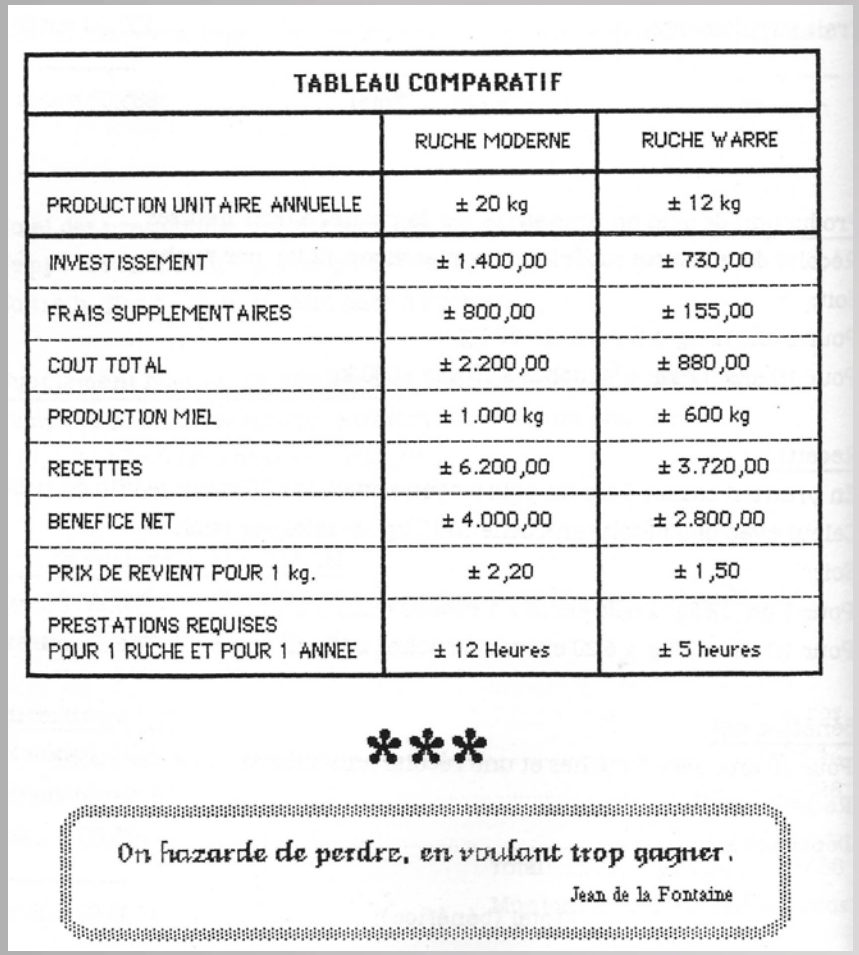
- Langstroth (mainstream)
- Horizontal Top Bar hives (illegal?/tolerated)
- Skeps, clay pots & tree-trunk hives - fixed comb or top bars (old school/illegal?)

✓ Warré Hives - Top bars, comb carriers or Frames (illegal or legal)

# Why the Warré?

- Less work
- Cheap / easy to build
- Healthier
- Easier lifting
- Modular system
- Easily mobile
- Legal in NZ (when framed)

# Honey Production Costs of Langstroth vs. Warré



| TABLEAU COMPARATIF | | |
|---|---|---|
| | RUCHE MODERNE | RUCHE WARRE |
| PRODUCTION UNITAIRE ANNUELLE | ± 20 kg | ± 12 kg |
| INVESTISSEMENT | ± 1.400,00 | ± 730,00 |
| FRAIS SUPPLEMENTAIRES | ± 800,00 | ± 155,00 |
| COUT TOTAL | ± 2.200,00 | ± 880,00 |
| PRODUCTION MIEL | ± 1.000 kg | ± 600 kg |
| RECETTES | ± 6.200,00 | ± 3.720,00 |
| BENEFICE NET | ± 4.000,00 | ± 2.800,00 |
| PRIX DE REVIENT POUR 1 kg. | ± 2,20 | ± 1,50 |
| PRESTATIONS REQUISES POUR 1 RUCHE ET POUR 1 ANNEE | ± 12 Heures | ± 5 heures |

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On hazarde de perdre, en voulant trop gagner.

Jean de la Fontaine

- Langstroth
  - €2.20 per kilo
  - 12 hours per hive per annum

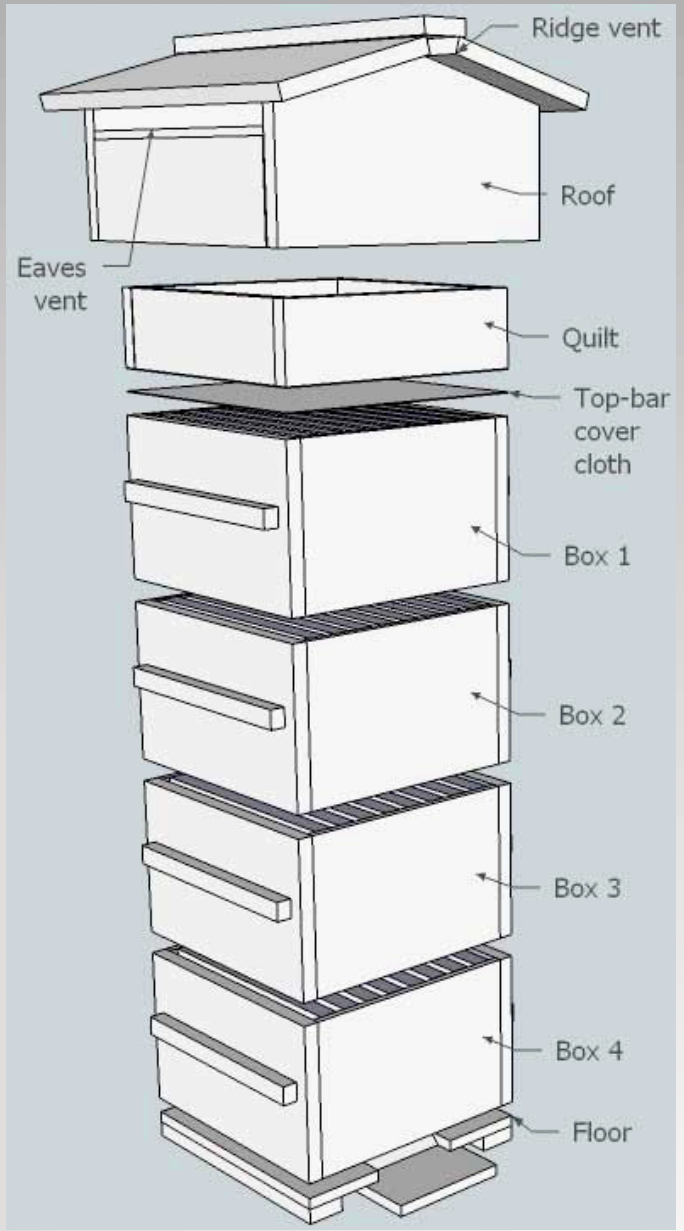
  Warré
  - €1.50 per kilo
  - 5 hours per hive per annum

  (5 hives for 10 years for each type)

L'Apiculture Ecologique de A a Z - Jean Marie Freres & Jean Claude Guillaume

# What is different about Warré's?

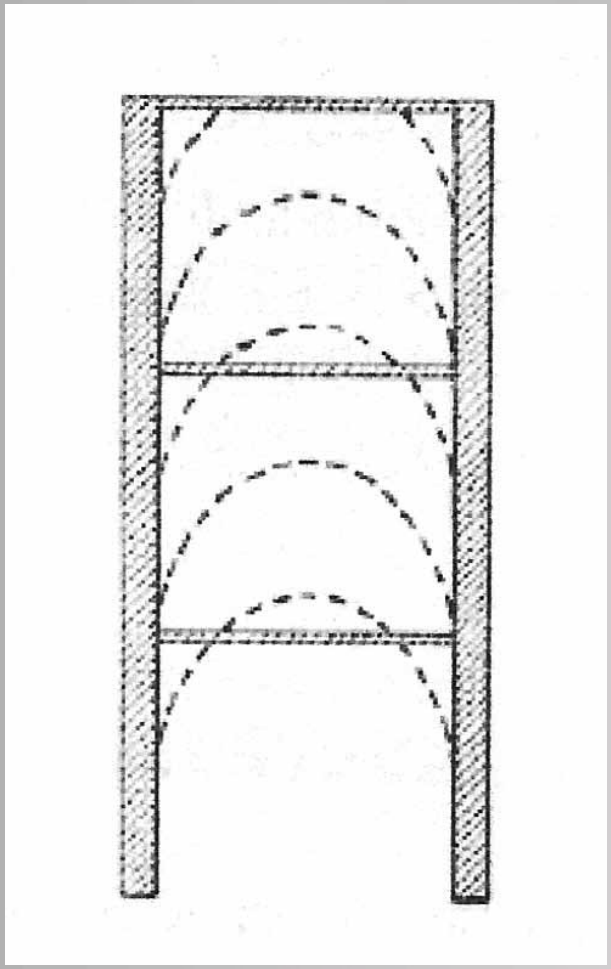
- Bottom Bee space
- Uses a quilt
- Nadiring not Supering
- Natural comb
- Square –Warmway
  Coldway
- Managed with Minimal intervention



# Quilt / Bottom Bee Space

waldeneffect.org

# Nadiring



Beekeeping for all - Abbé Warré

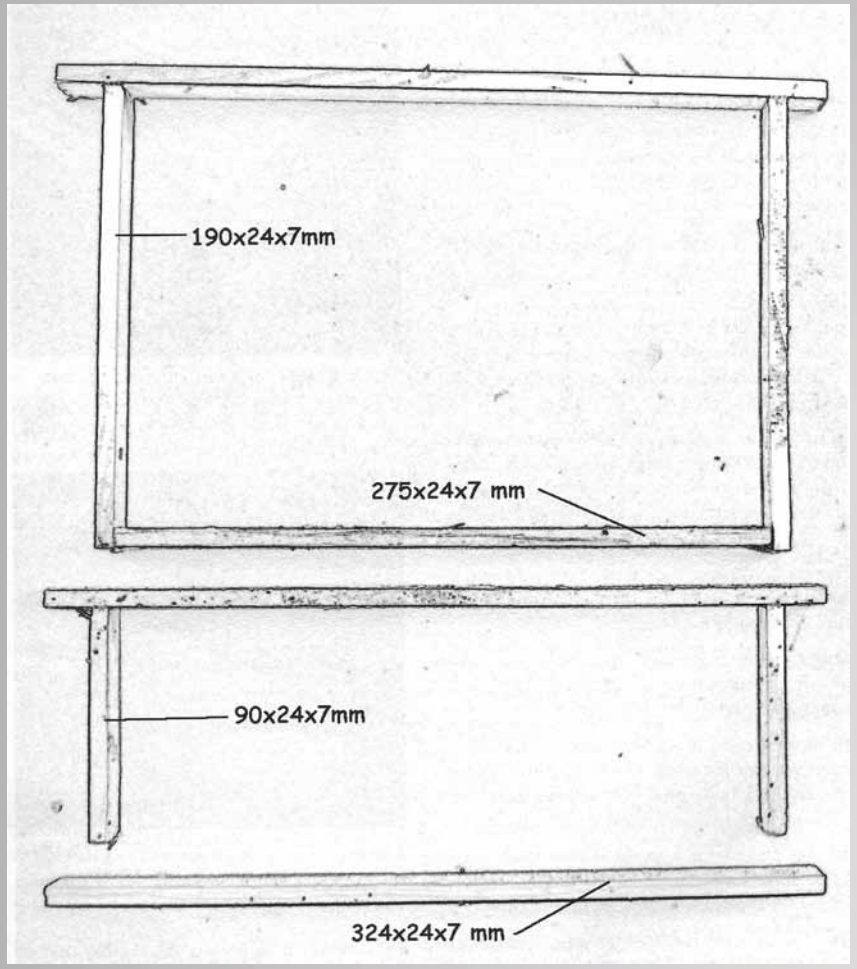
Brood Naturally descends

↓

New boxes added below

Gatineau Lift - flypiedrahita.com

# Natural Comb




La Ruche Warre - Gilles Denis

- Starter Strips rather than foundation….
  - In Frames
  - In open frames (comb carrier)
  - On Top Bars / fixed comb (illegal in nz)

# No Frames (illegal in NZ)

- L'Abbé Warré regarded frames as one of the main causes of disease. (weakening hive)
  - Frames stress bees, making it more difficult for them to maintain the hive climate (harder for heat retention, humidity control, pheromones)
  - Warré relates that many in France believed that Foulbrood (A, E?) came in with the introduction Italian Bees. But he blames framed beekeeping where the "bee wears itself out to no purpose".

# A few Warré Beekeepers

Tim Malfroy- Australia

David Heaf, Wales

Gilles Denis
France

Gilles Denis - 100 x 2 element hives

# Natural Beekeeping
# Michael Bush's 4 simple steps to healthier Bees

1. Use Natural Comb
2. Breed from Local Survivors
3. Don't Treat
4. Use Natural Food

The Practical Beekeeper - Michael Bush - bushfarms.com/bees.htm

# Step 1. Natural Comb

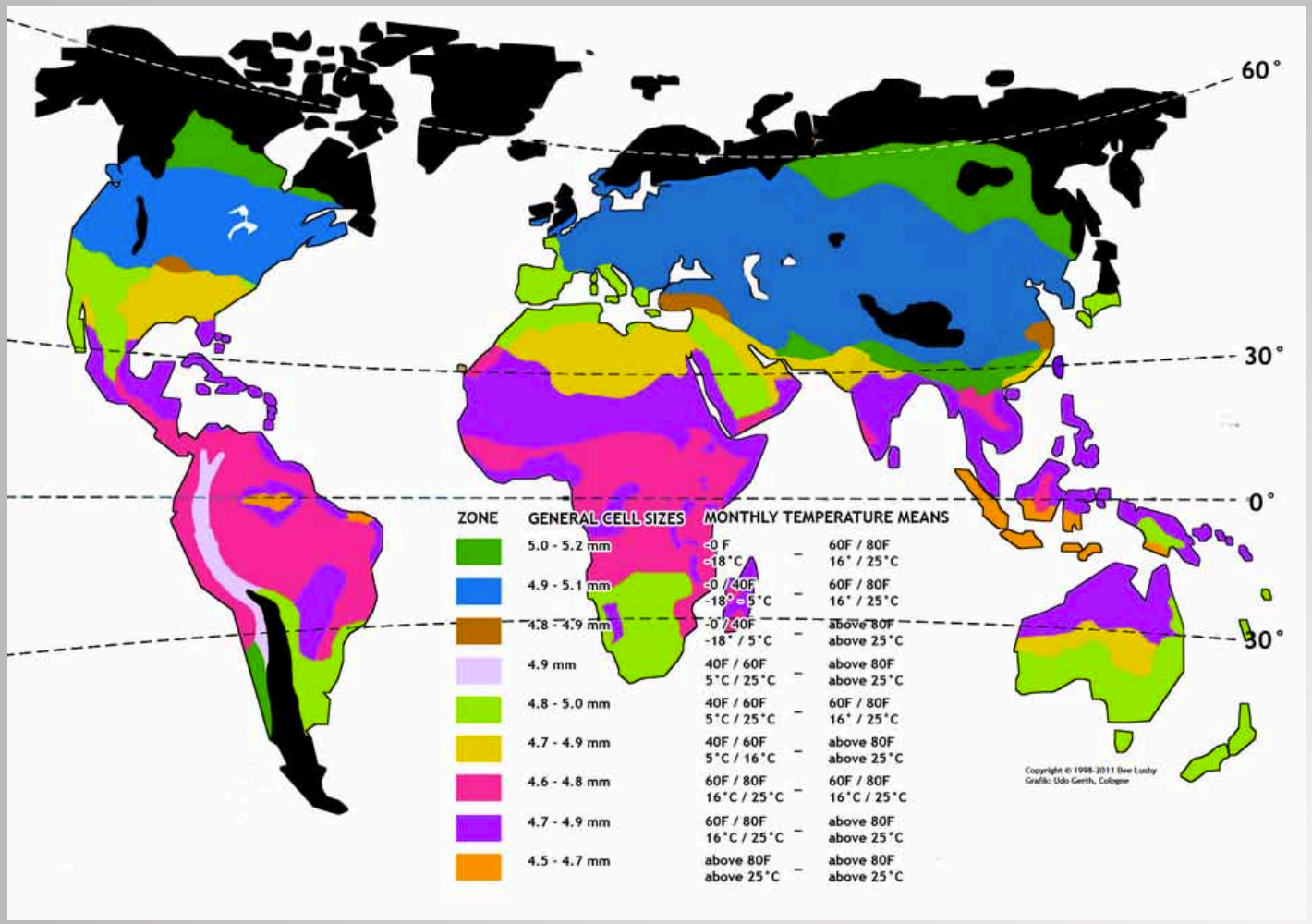
- Healthier Bees
  - Comb is made to order of what the bees need, smaller cells for brood, larger for honey
  - Better climate control
  - Clean, no long term build up of pathogens / insecticides
- Great supply of quality wax
- Purer Honey

# Is Drawing Comb a waste of Resources?

- Michael Bush relates:
  - It doesn't take longer for Bees to draw their own comb… Bees draw plastic with the most hesitation, wax with a little less and their own comb with the most enthusiasm.
  - In my observation, and others including Jay Smith, (Better Queens) the queen also prefers to lay in newly drawn natural comb.

The Practical Beekeeper - Michael Bush - bushfarms.com/bees.htm

# So what about Cell Size? – Dee Lusby's Research




Resistantbees.com

# "…large cells, large Bees, long tongues lots of honey" but more Varroa!

- Professor Baudoux about 100 years ago experimented with extreme cell sizes, large and small, since then cell size on all foundations has remained at about 5.4 mm to this day.
- It looks like the bee gets to its natural balance on a cell size from 4.9 mm downwards. At 4.9 mm, and the distance between the combs reduced to 32 mm, the temperature in the nest rises, reducing one day of the incubation period. At 20 instead of 21 days, the bees outrun the Varroa.

Iris & Stephan (La Palma) resistantbees.com

# Michael Bush does the Math's

- I've observed on commercial Carniolan bees and commercial Italian bees a 24 hour shorter pre capping and 24 hour shorter post capping time on 4.95 mm cells in an observation hive.
- My observations on 4.95 mm cell size
  Capped 8 days after layed
  Emerged 19 days after layed
- 8 hours shorter capping time halves the number of Varroa infesting a brood cell.
- 8 hours shorter post capping time halves the number of offspring of a Varroa in the brood cell.

The Practical Beekeeper - Michael Bush - bushfarms.com/bees.htm

# Does Small Cell really help Varroa Resistance? On the YES side

- Dee and Ed Lusby who did much of the pioneering work on small cell size operate treatment free.
- In 1990, Erickson et al, *On the size of cells.* Published in Bee Culture confirms.
- Studies from Brazil also confirmed…
- And in many posts in Online forums, Beekeepers say that they were doing it.

Erik Österlund - Analysis of Small cell test designs - Linnaeus University Sweden - resistantbees.com

# On the NO side…

- Later tests couldn't verify the first research papers from USA and Brazil. It was common among researchers to dismiss the first positive results as associated with Africanized bees.
- "The effect of honey bee worker brood cell size on Varroa destructor infestation and reproduction", Michelle A. Taylor, R. Mark Goodwin, Heather M. McBrydie and Harlan M. Cox (2001 & 2008)
- Trial of HoneySuperCell® Small Cell Combs, Randy Oliver
- Among many others

Erik Österlund - Analysis of small cell test  Queen breeder Elgon Bees

# So the Case is Closed?

- The recent serious studies say Yes, “CC”. Small cells are no advantage
- Erik Österlund and others suggest the complexity of the hive is not understood and the test designs are flawed.
- Many beekeepers just doing it report success with small cells

# Step 2. Breed from Local Survivors

- Returning to Warré, he insists breed your own queens, commercial queen rearing weakens the species
  - If all queens are commercialized there is no selective breading, (often the case)
  - If there is selective breading it is often cancelled out by the abnormal feeding of sugar which inevitably weakens the stock and sets up favourable conditions for illnesses, for foulbrood among others
  - Work with nature, bread from the strong hives and cull the weaker.

Beekeeping for all - Abbé Warré

# Work with Nature

- And Österlund relates: Animals and Plants adapt to new environments in a powerful way through … Epigenetics !
  - there is no other way to explain the formation of resistant Apis mellifera bees in South America in the 1980s and in South Africa in the 2000s…
  - In both cases it took about 5 years to develop resistance, and without masses of bees dying from Varroa….
  - What was seen was a decrease of a 50 % mite infestation (one mite on every 2nd bee) to about 5% mite infestation (one mite on every 20th bee).

Breeding resistant bees. Linnaeus University – elgon.se/index-eng.htm

“If you're not part of the genetic solution of

breeding mite-tolerant bees,

then you're part of the problem”

-Randy Oliver

scientificbeekeeping.com

# Step 3. No Treatments

- Hive Ecology
  - Over 8,000 Micro organisms
  - 30 Kinds of insects
  - Over 170 Mites

- Treatments
  - Acaracides kill all mites and most insects
  - Organic acids kill many microorganisms beside mites and some insects
  - Essential oils kill many microorganisms

The Practical Beekeeper - Michael Bush - bushfarms.com/bees.htm

# Our common Knowledge about treating

- There is already evidence of resistance to treatments through-out the world and now in NZ
- Multiple studies show wax gets contaminated as a result of both in-hive Acaracide treatments and, to a lesser extent, environmental pollution.
- And Natural beekeepers argue that treatment creates stronger Varroa and weaker bees.

# Step 4. Natural Food

- Michael Bush relates:
  - Honey and real pollen are the proper food of bees. Sugar syrup has a much higher pH (6.0) than Honey (3.2 to 4.5) (Sugar is more alkaline).
  - Feeding sugar affects the reproductive capability of virtually every brood disease in bees plus Nosema The brood diseases all reproduce more at the pH of sugar.

The Practical Beekeeper - Michael Bush - bushfarms.com/bees.htm

# Feed Honey not Sugar

- Differences in pH affect other beneficial and benign organisms in the hive.
- The other 8,000 microorganisms that are also in the hive are affected by changes in ph.
- Using sugar syrup also disrupts the ecological balance of the hive by disrupting the pH of the food in the hive and the food in the bees' gut.
- Honey and real pollen are more nutritious than pollen substitute and sugar syrup

The Practical Beekeeper - Michael Bush - bushfarms.com/bees.htm

American Queen breeder Jay Smith suggests that the prevalence of American foulbrood in the North of the USA is related to sugar feeding. Southern Bees have longer seasons and are feed less sugar resulting in less foulbrood

Better Queens (from Michael Bush – bushfarms.com)

# Small Cell/Natural Comb Beekeepers already doing the impossible, Keeping Bees Treatment Free

- Dee Lusby in USA  (Langstroth Narrower frames)
- Gilles Denis in France (Warré, porte rayon& TB)
- Jean–Marie Frérés & Jean Claude Guillaume in Belgium (Warré Top Bars)
- David Heaf in Wales ( Warré & Langstroth)
- Sam Comfort in USA (all sorts and Whatever)
- Thore Härnkloo in Sweden (Langstroth style)
- Tim Malfroy in Australia Warré (No Varroa)

# David Heaf

https://www.youtube.com/watch?v=6gCY6EZkgxE

# Sam  Comfort

https://www.youtube.com/watch?v=bjtc7lf-axM

# Our Apiary?


Bryan & Solange's Mamaki Farm Apiary

# Well? We are trying it on…

- Build our own hives, just wood no paint or preservative (except lids)
- We don't feed
- From essential oils to no treatment
- Breeding our own Queens from our strongest hives
- Using minimal intervention
- 4 hives to 10, to 6… to ?

# Online Resources used for Towards Natural Beekeeping with Warré Hives… and a treatment free apiary

- Warré's
  - David Heaf http://warre.biobees.com/index.html
  - Gilles Denis http://ruche-warre.com/
  - Tim Malfroy http://www.naturalbeekeeping.com.au/warrebeehives.html

- Small Cell and Natural Beekeeping
  - Natural Beekeeping / Michael Bush
  - http://www.bushfarms.com/bees.htm
  - Dee Lusby http://www.beesource.com/point-of-view/ed-dee-lusby/
  - Iris and Stephan at Resistant Bees http://www.resistantbees.com/index_e.html

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