

Practical Varroa Resistance Selection for Beekeepers

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History

Selection results

“A modest proposal”

Chemical treatments tests on our bees in Toulouse

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- | | |
|------------------|--|
| 1983-1984 | Folbex (Bromopropylate) |
| 1983-1984 | Apitol (cymiazole hydrochloride) |
| 1985 | Perizin (coumaphos) test for AMM |
| 1986 | Amitraz (triazapentadiene) |
| 1986-1987 | Comparaison Perizin- Amitraz |
| 1988-1989 | Apistan (tau-fluvalinate) tests for AMM |
| 1991 | Bayvarol (fluméthrine) |

Survival tests in Toulouse and Unije (Croatia)

- 1993-1993 ***Uruguayan Bees*** (Oberursel, Olsztyn, Toulouse)
- 1993-2004 ***Tunisian Bees*** (Freiburg, Toulouse)
- 1993-2009 ***European Bees*** (Toulouse)
- 1999-2005 ***International survival test*** (Unije)

... and because of Red tape (Schengen Agreement)

- 2001 Legal importation of ***USDA Russian Primorsky queens*** to Toulouse with transshipment to Germany for survival testing

SURVIVAL - SELECTION TESTS

Bond Test (BT)
Live and let die
1998, Bremen

Bond Accelerated Test (BAT)
Survive or die now
2003, Ljubljana

RECEPTIVITY :

**ABILITY TO PERMIT THE PRESENCE
OF A PARASITE AND ITS NORMAL
LIFE CYCLE DEVELOPMENT**

RESISTANT BEES ARE NOT RECEPTIVE TO VARROA

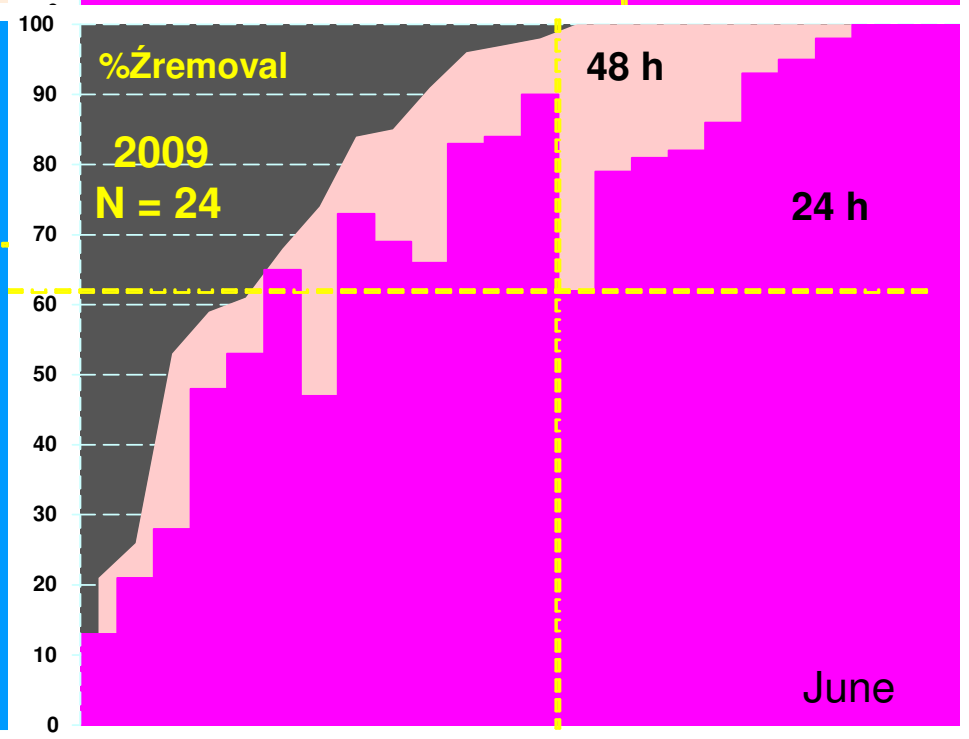
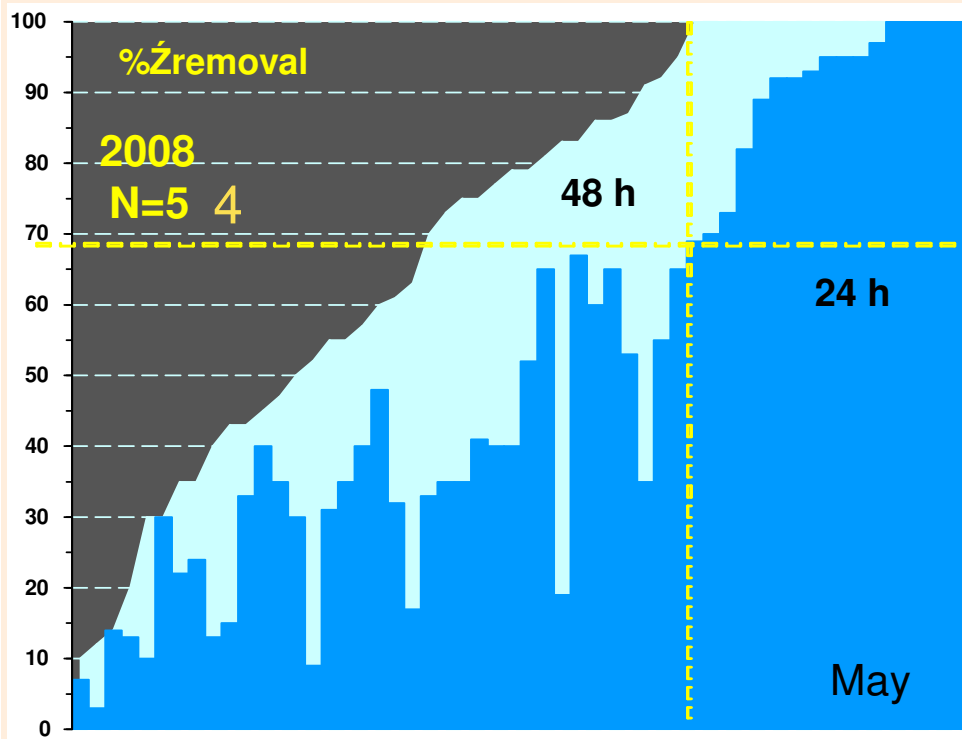
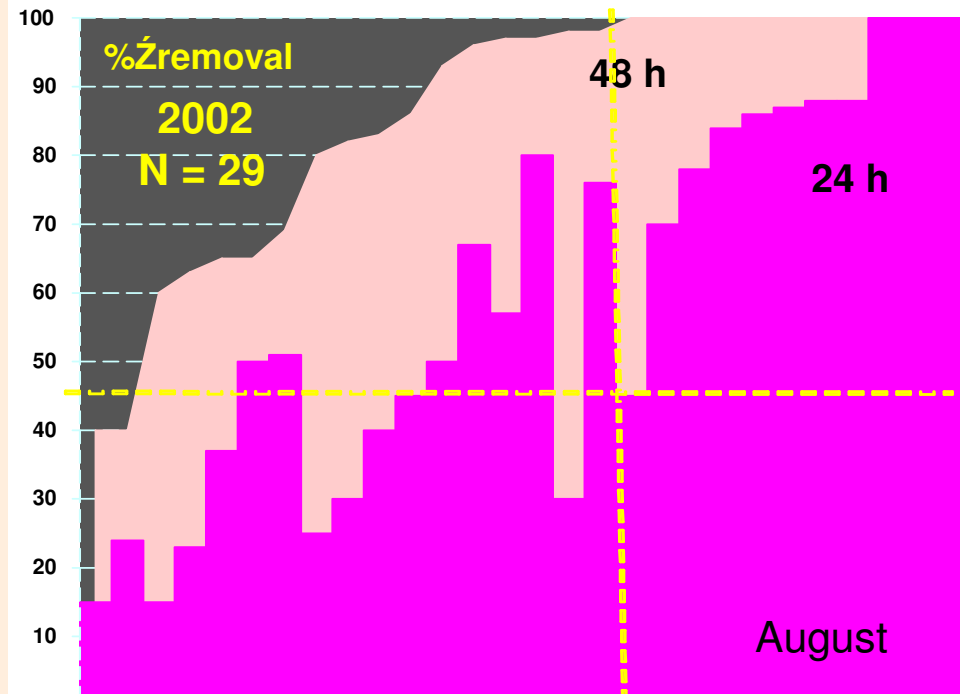
SENSIBILITY :

**ABILITY TO EXHIBIT THE SYMPTOMS
OF A PARASITIC INFESTATION**

A TOLERANT ANIMAL IS PARASITIZED BUT NOT HINDERED

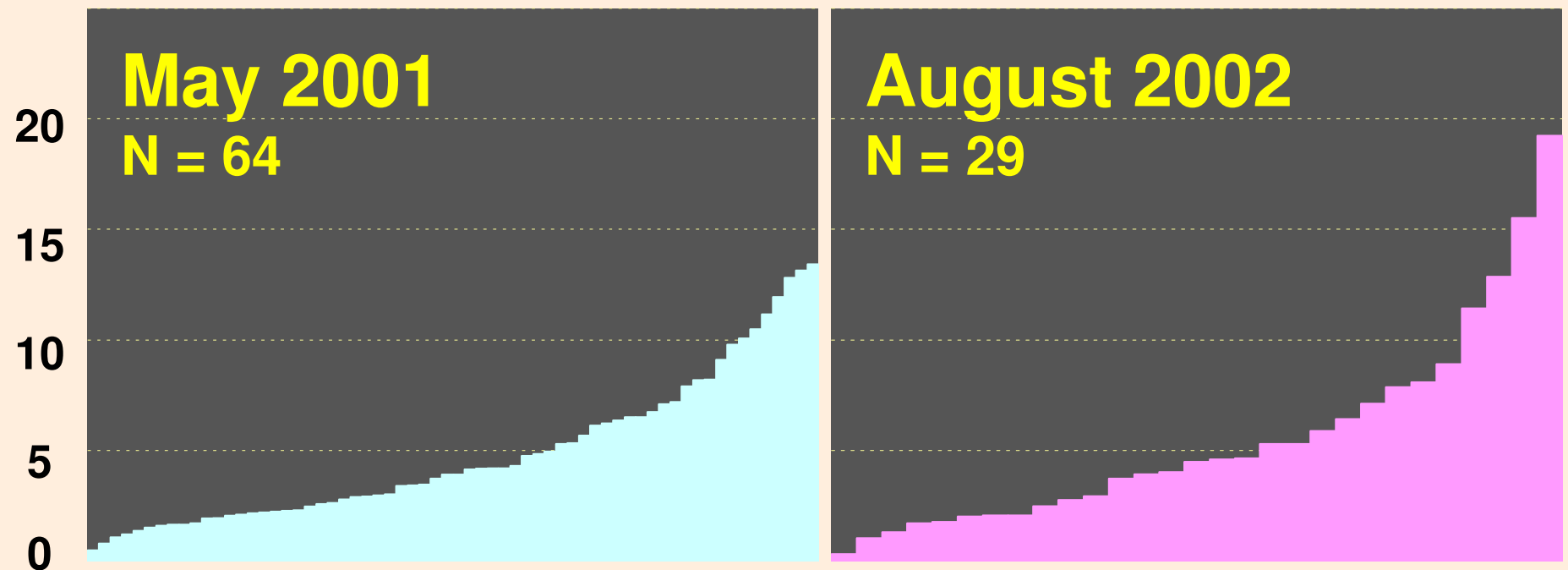


Hygienic behavior selection

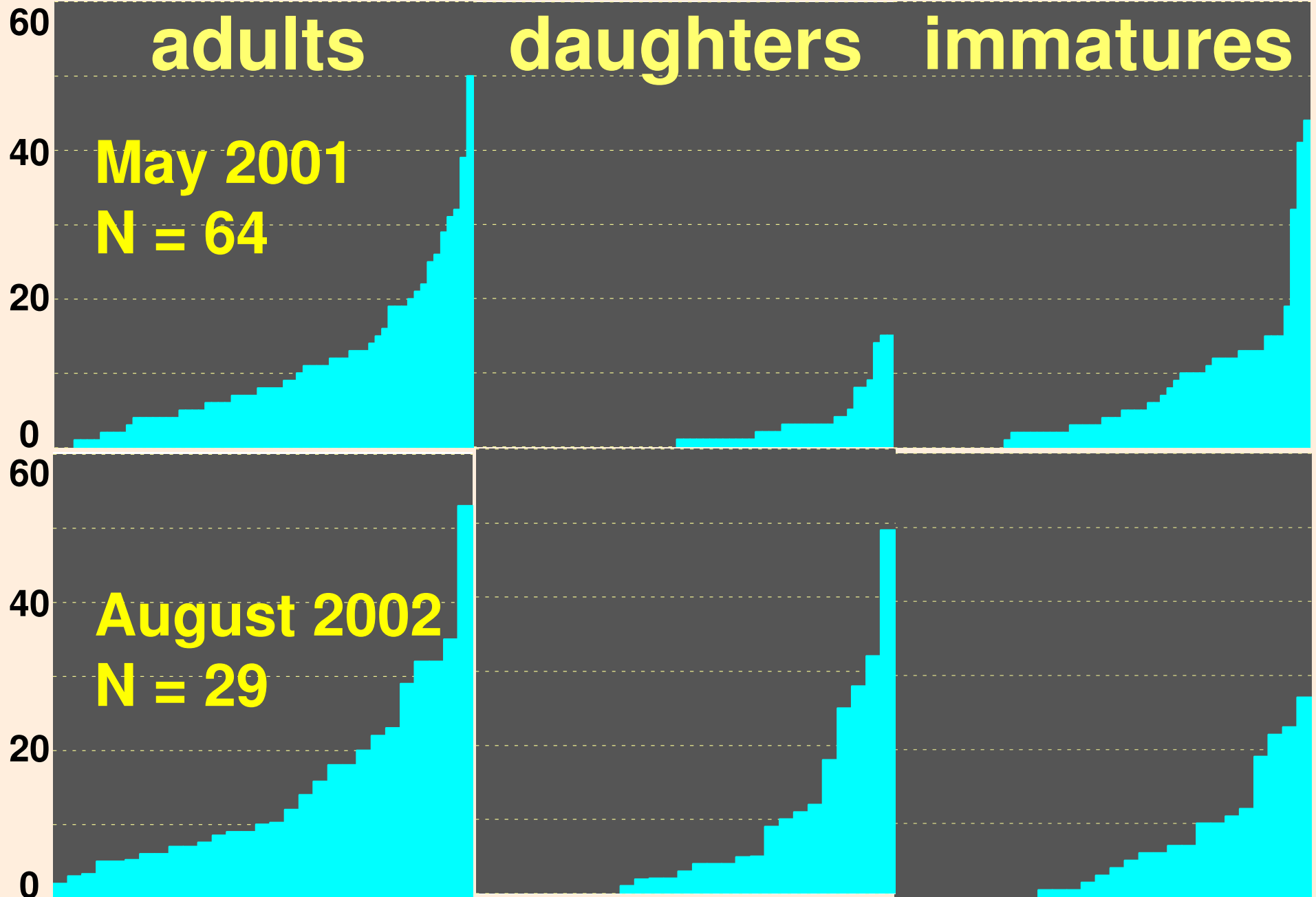


Our Varroa Situation in 2001 and 2002

Varroa / 100 adult Bees



***Varroa* /100cells capped brood**



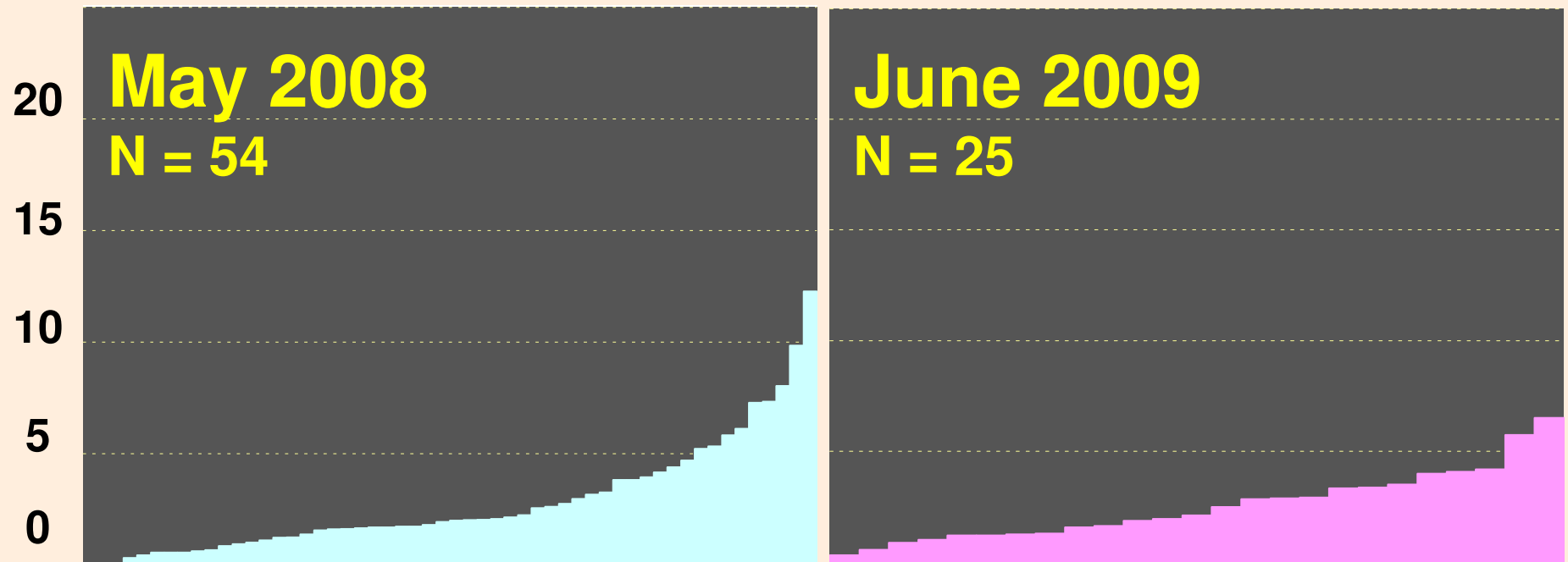
Bond Test Results

2/3 of the hives died out

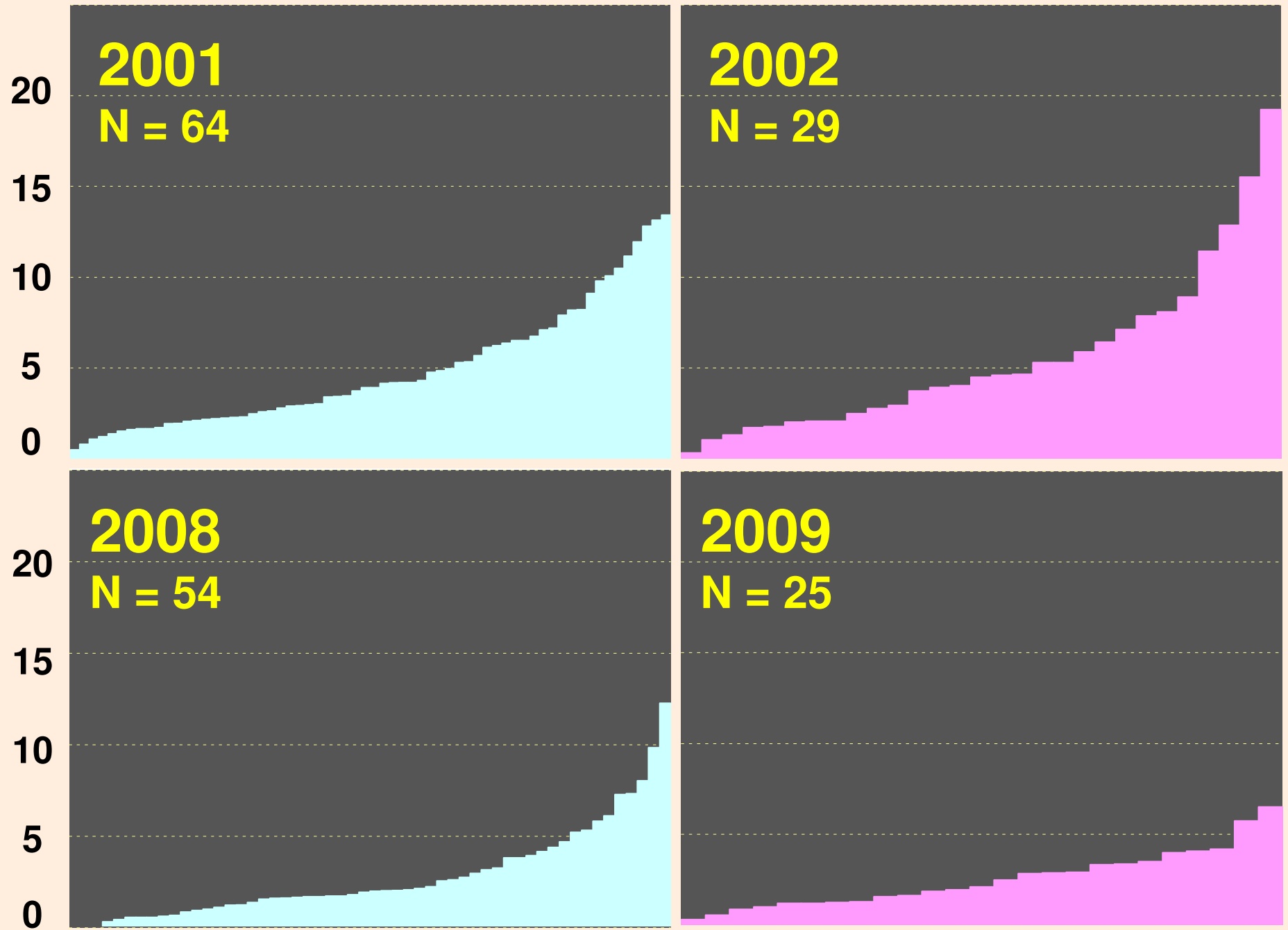
1/3 survived

Our Varroa situation at the present time

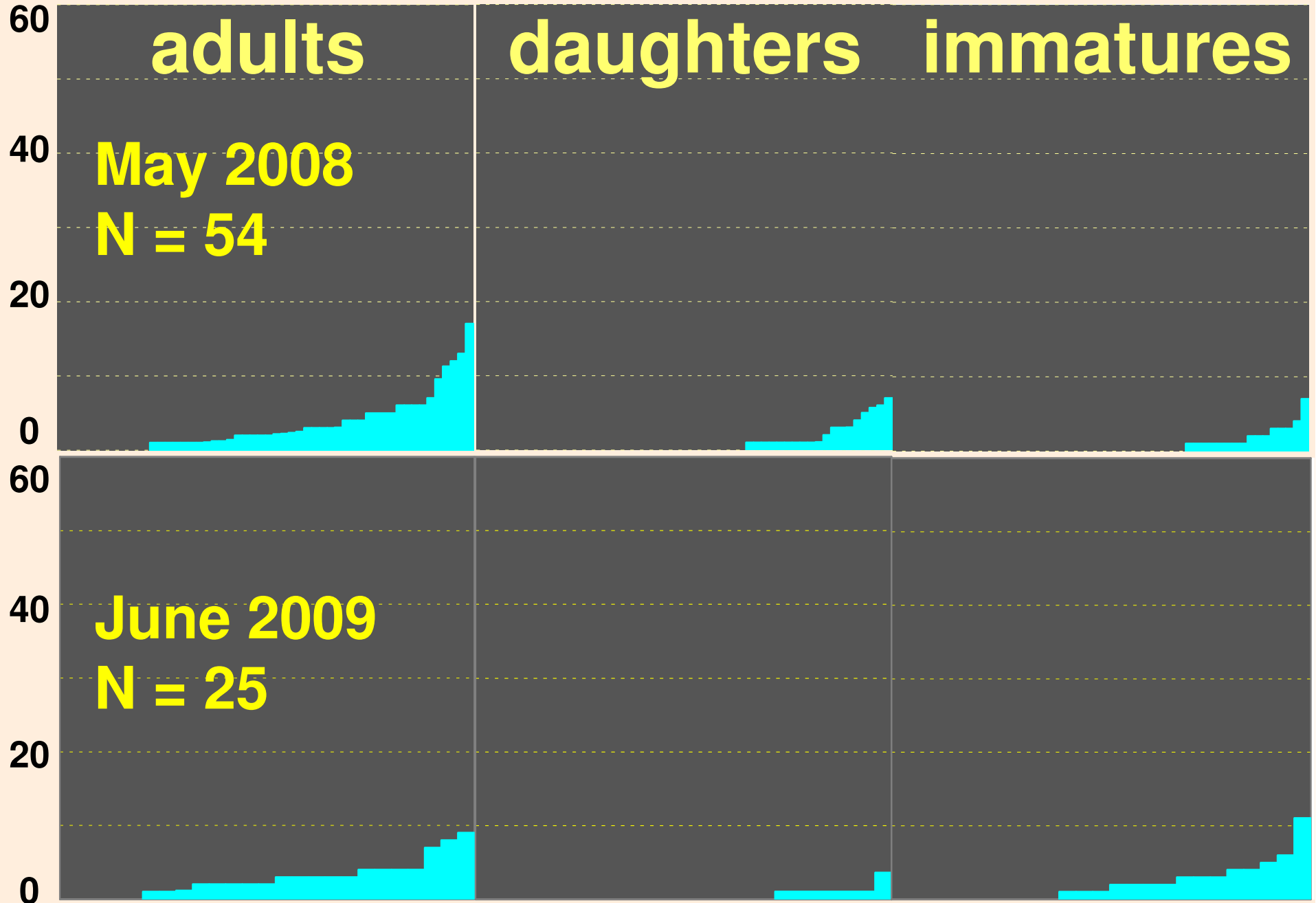
Varroa / 100 adult Bees



Varroa / 100 adult Bees



***Varroa* /100cells capped brood**



At present time
Colonies tolerant
with very low receptivity to varroa

- ***Losses are about the same as or less than beekeepers that treat (15%)***
- ***Hygienic behavior is correct***
- ***Evolving towards resistance***

Chemical treatments not justified

***Why
have most beekeepers
not
adopted the Bond Test?***

Problems with Bond & Bat tests

Bond Test

Hive losses on a regular basis
until tolerance - resistance appears

Bat Test

Too fast to permit selection for
long term mechanisms of resistance

***Biggest problem for
beekeepers***

FEAR

**“I can loose
everything!”**

Find a technic acceptable to beekeepers

- Simple
- Cheap
- Few Risks!

But above all

“ Emotionally comforting ”

Soft Bond Test selection (SBT)

Do expensive and time consuming testing on a limited amount of hives

Challenge selection :

Production tests	500 hives (example)
Hygienic tests	100 hives
Varroa counts	40 hives
Bond Test	20 hives

(Vary amounts if less or more hives)

Very important

After the varroa count

But

before the Bond Test ...

... spread out your breeding material

- 1. Rear daughters and re-queen a maximum number of hives**
- 2. Utilize as many different breeder lines as possible to minimize inbreeding**
- 3. Put daughters in all bee yards to produce selected drones for future matings**
- 4. Exchange genetic material with other beekeepers in case you loose a breeder line.**

... then Run the Bond Test

GRAFT *from the “ Bond Test ” queens
with lowest amount of varroa*

MONITOR *varroa levels in brood before treating
hives not in “Bond Test”*

STOP *chemical treatments when brood
varroa infestations are less than 5%*

**Repeat Soft Bond Test
from time to time**

Advantages of Soft Bond Test

- 1. Natural mating***
- 2. No special equipment needed***
- 3. Increased economic performance***
- 4. Hygienic behavior increases resistance to brood diseases***
- 5. Limited losses***
- 6. Save time and money spent on treatments***
- 7. Comforting because few risks***



***“The only thing you have
to fear is fear itself.”***

Rucher D'Oc

World Varroa Challenge

1 cent for every varroa you find from our hives

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31340 Le Born France
(42 km north of Toulouse)

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