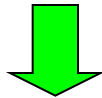


# Finnish Varroa control concept

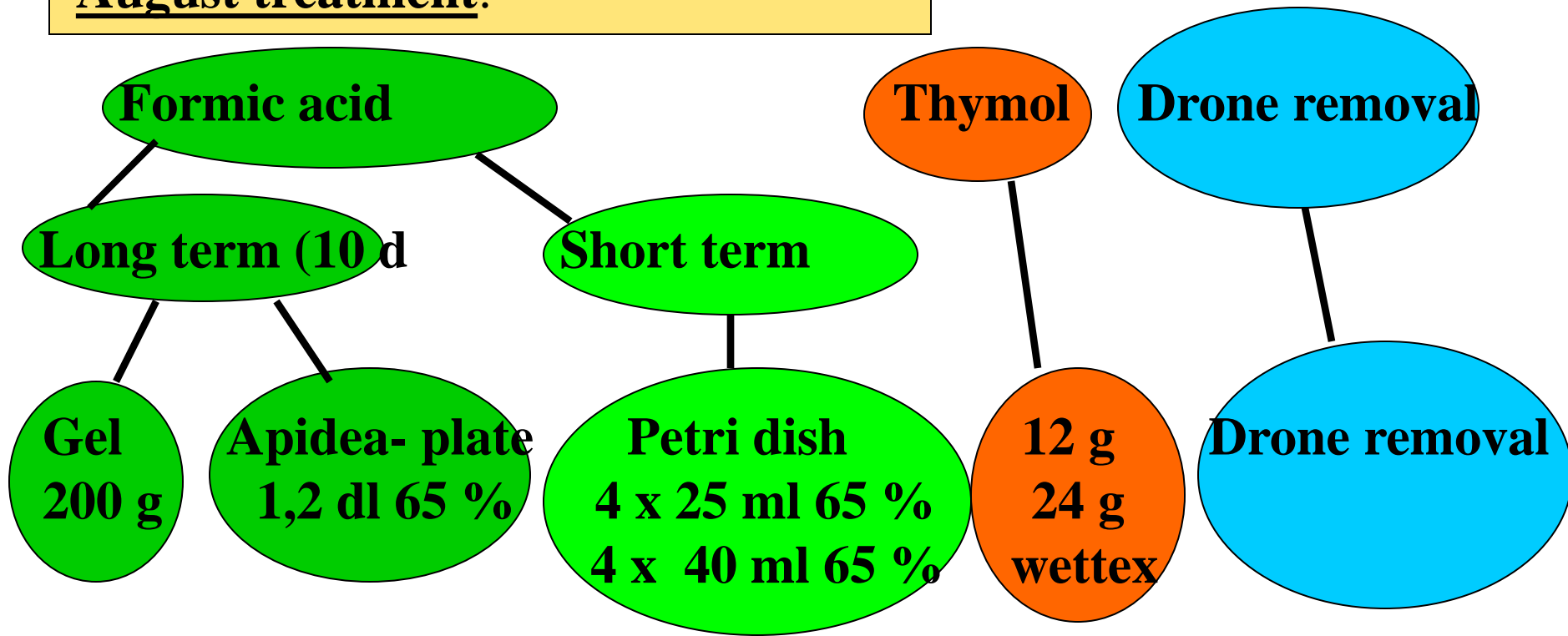
- **Varroa increases the winterlosses +/- 10 %, in some cases it seems to be a disaster for bee operation**
- **The chemical treatments caused residues and resistance**
  - **Apistan - > fluvalinate in wax**
  - **Resistant mites to fluvalinate in**



**Alternative control concept needed, based on:**

- **Swiss concept**
- **European development work of using oxalic acid and thymol**
- **Formic acid gel from (Beltsville bee research USA)**

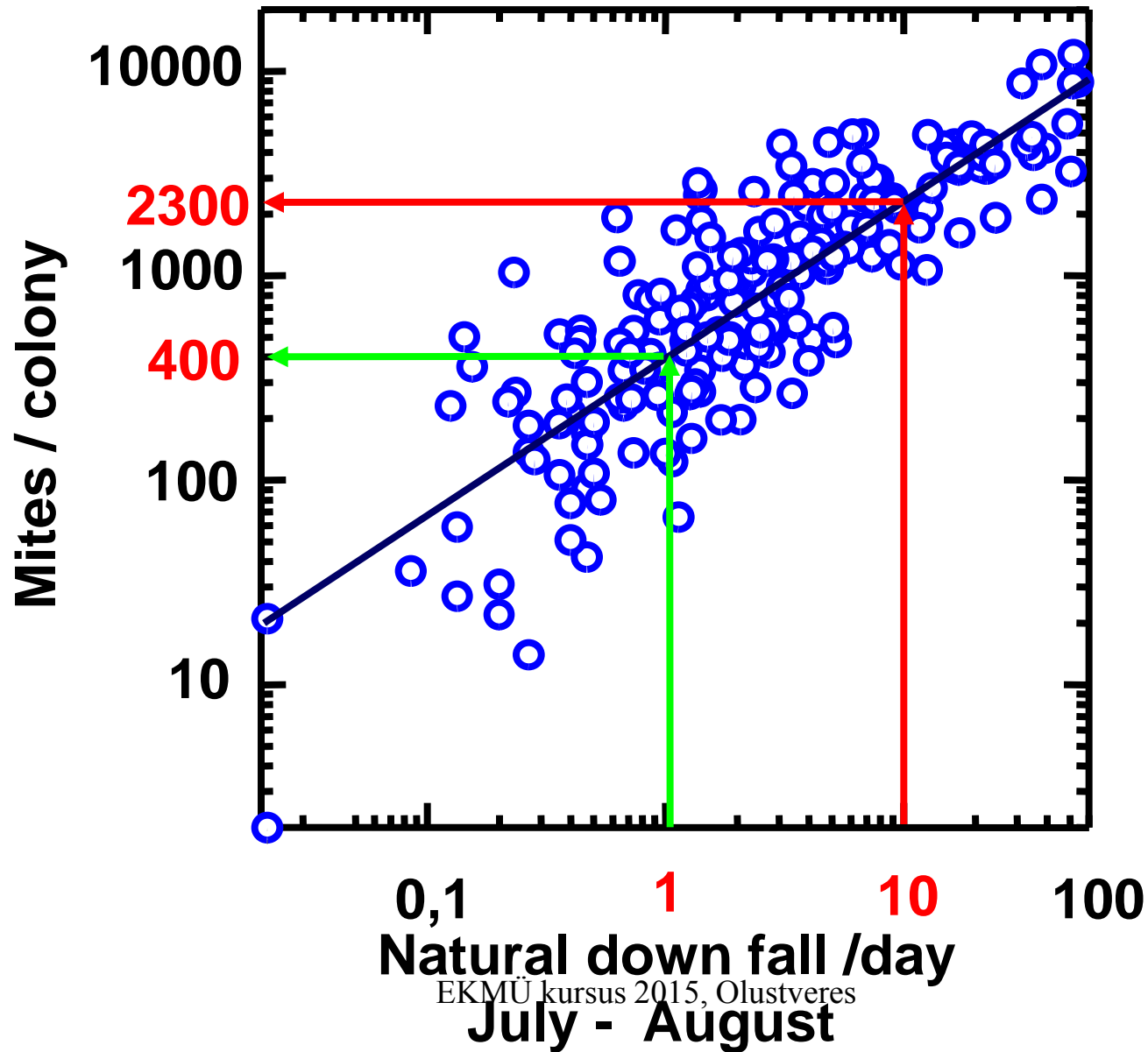
**August treatment:**



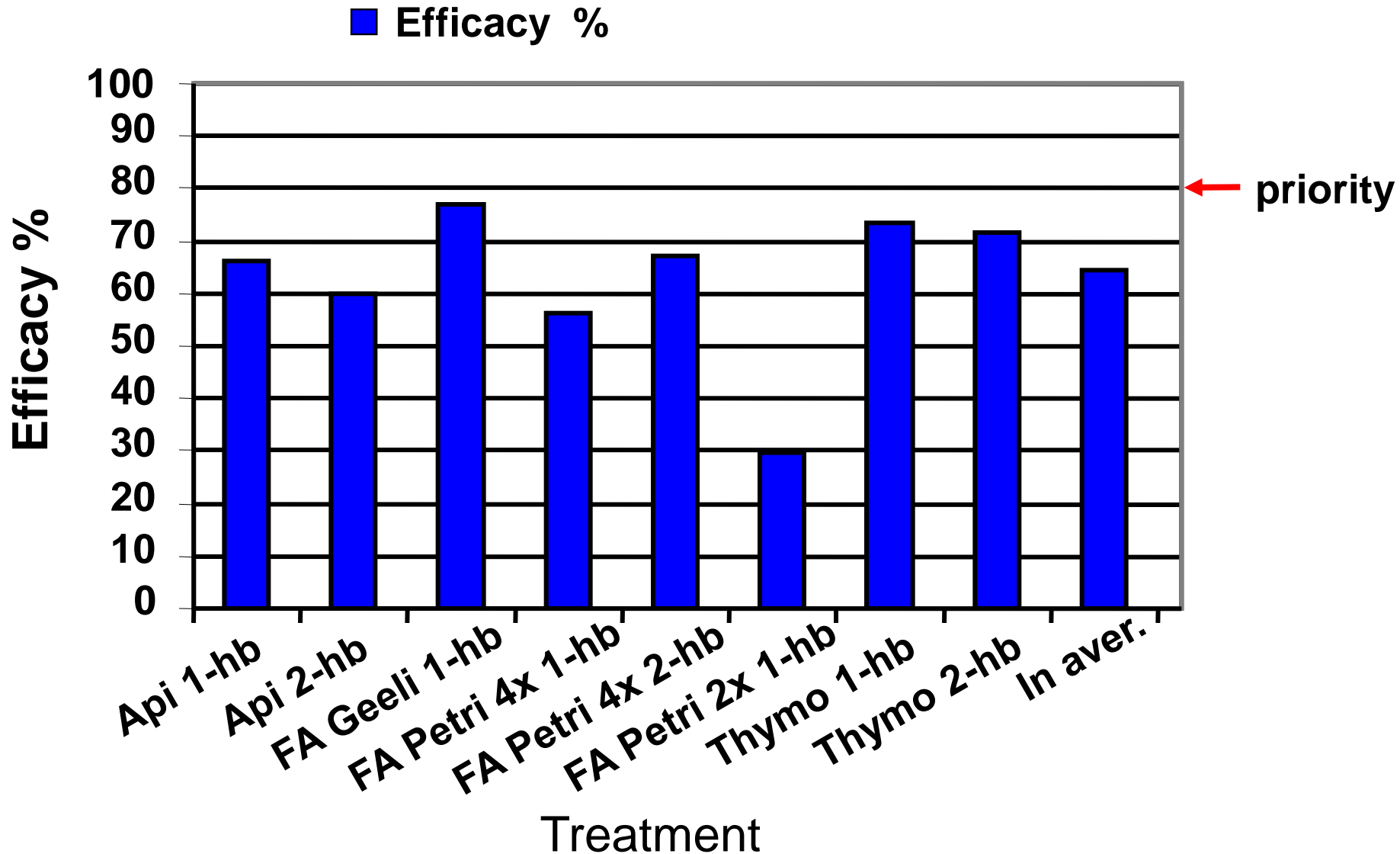
**Control treatment when the colony is broodless**

**Oxalic acid trickling 20 - 50 ml 3,2 % / colony on bees**

# Natural mite fall/day and total number of mites



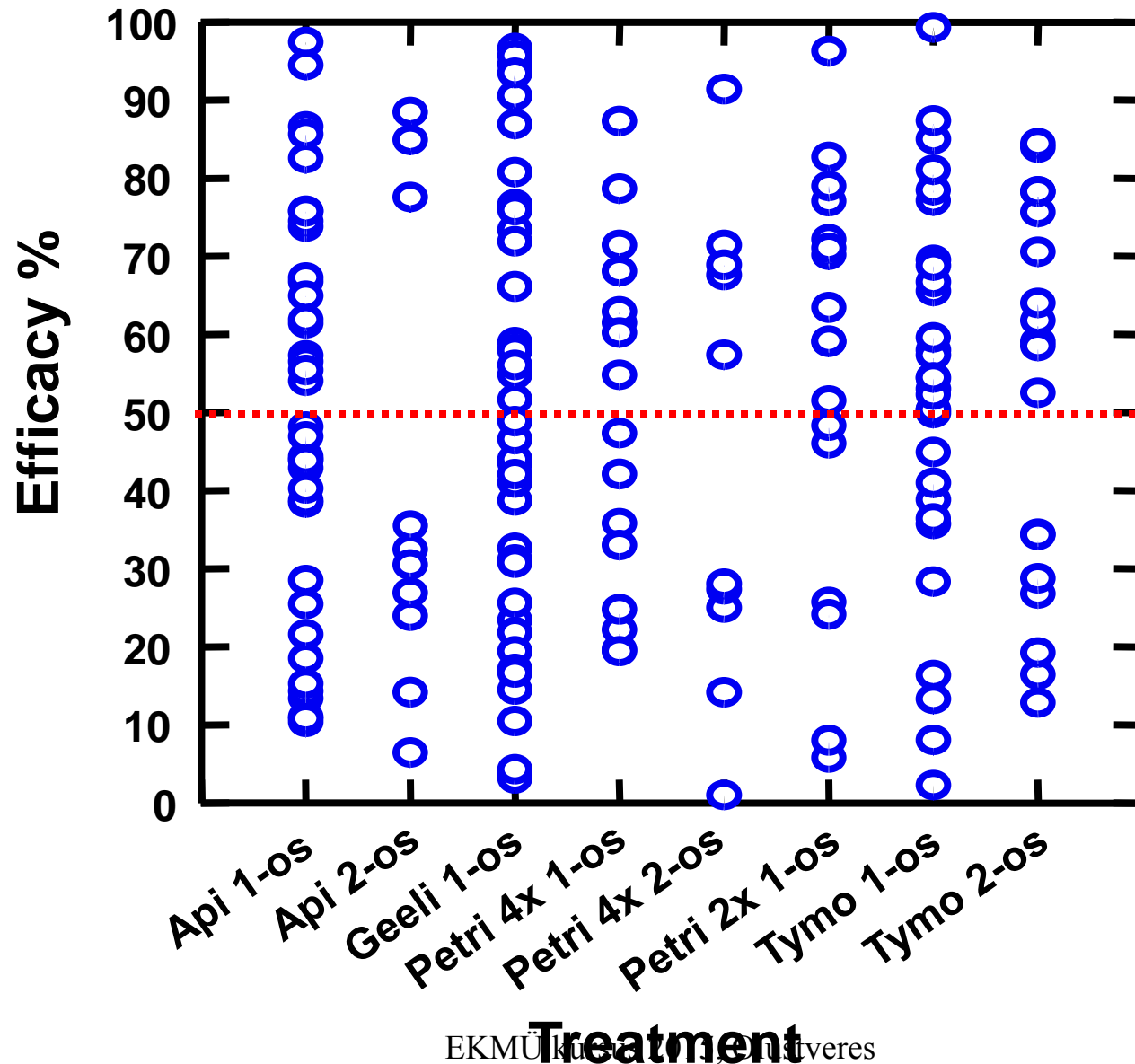
# The efficacy of different treatments



## Where is the problem in Varroa control ?

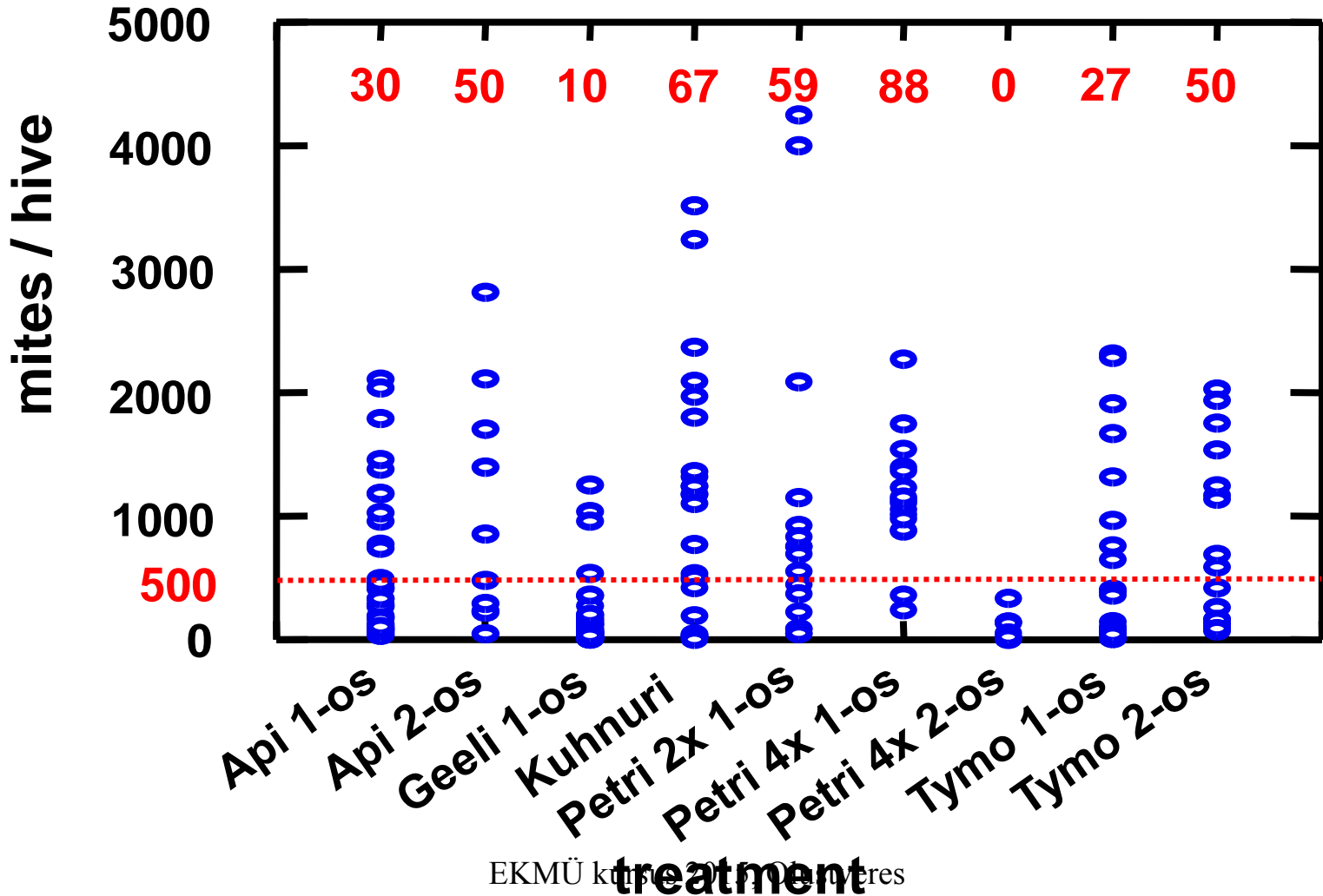
- too low efficacy of the substance
- resistance of mites
- residues in honey or wax
- re infestation from surrounding
- or is it the bee keeper?

# The variation of efficacy in bee colonies



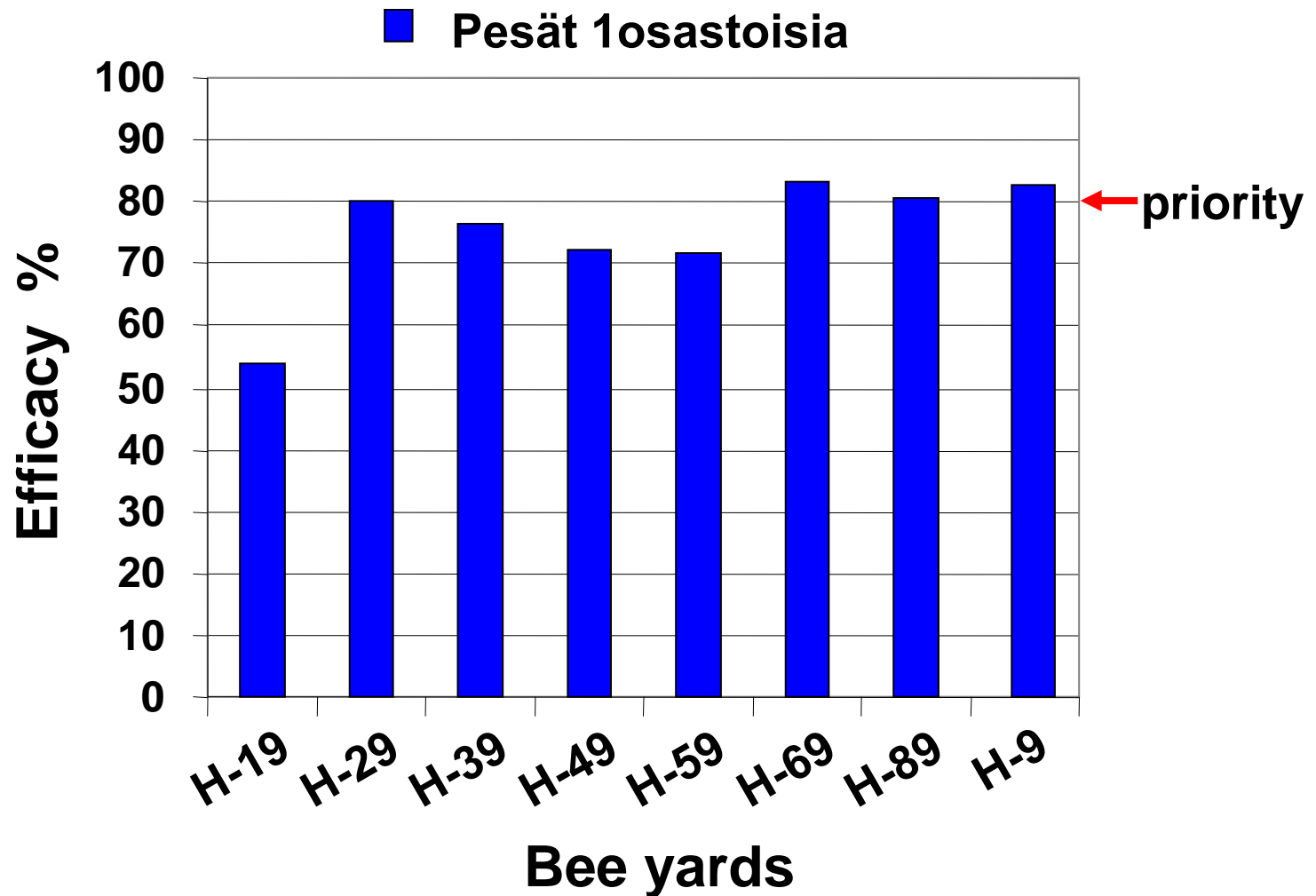
# Mite down fall in control treatment with oxalic acid

**% of the colonies which have more than 500 mites**



# Efficacy in different bee yards

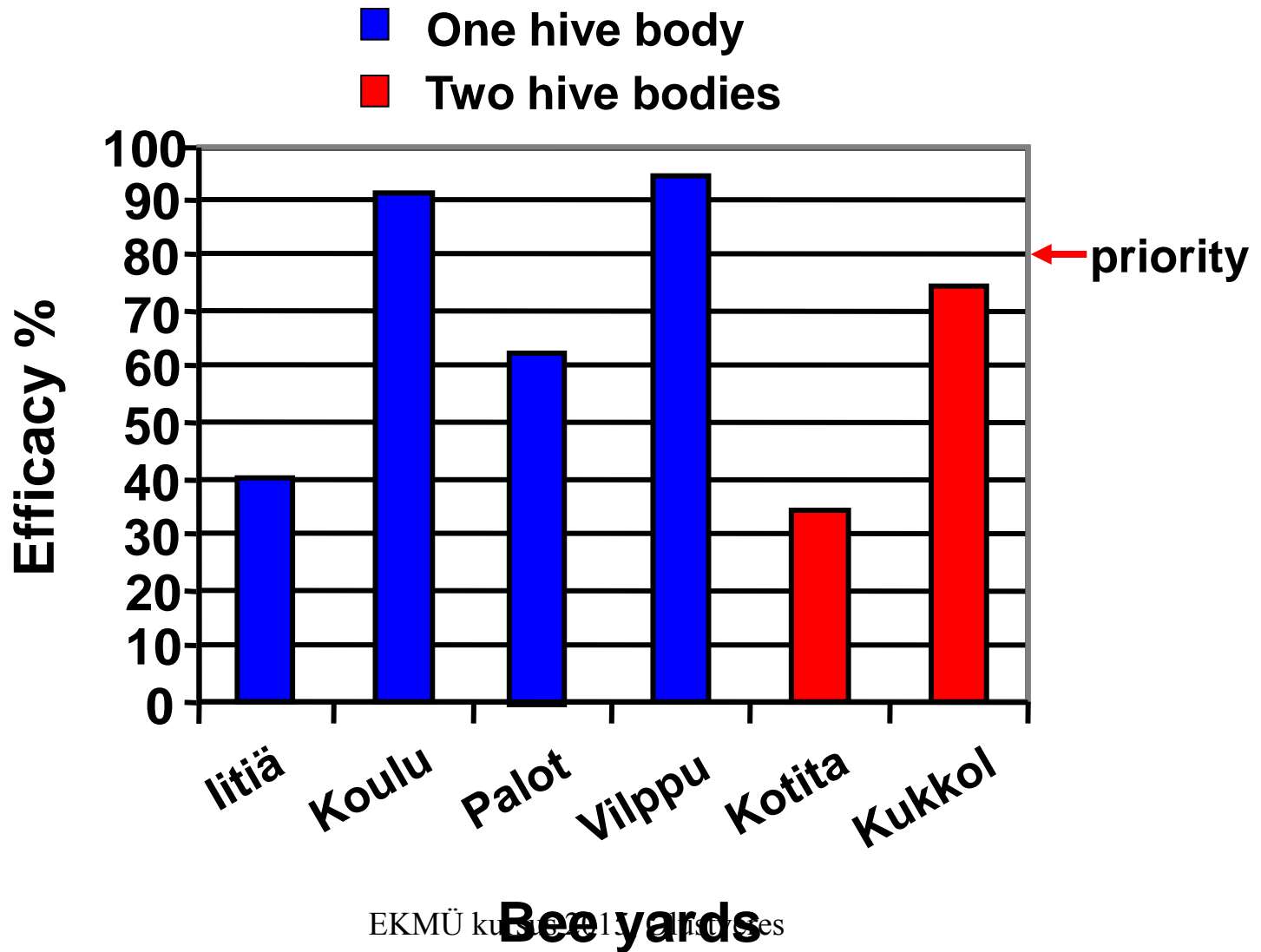
## Formic acid Gel





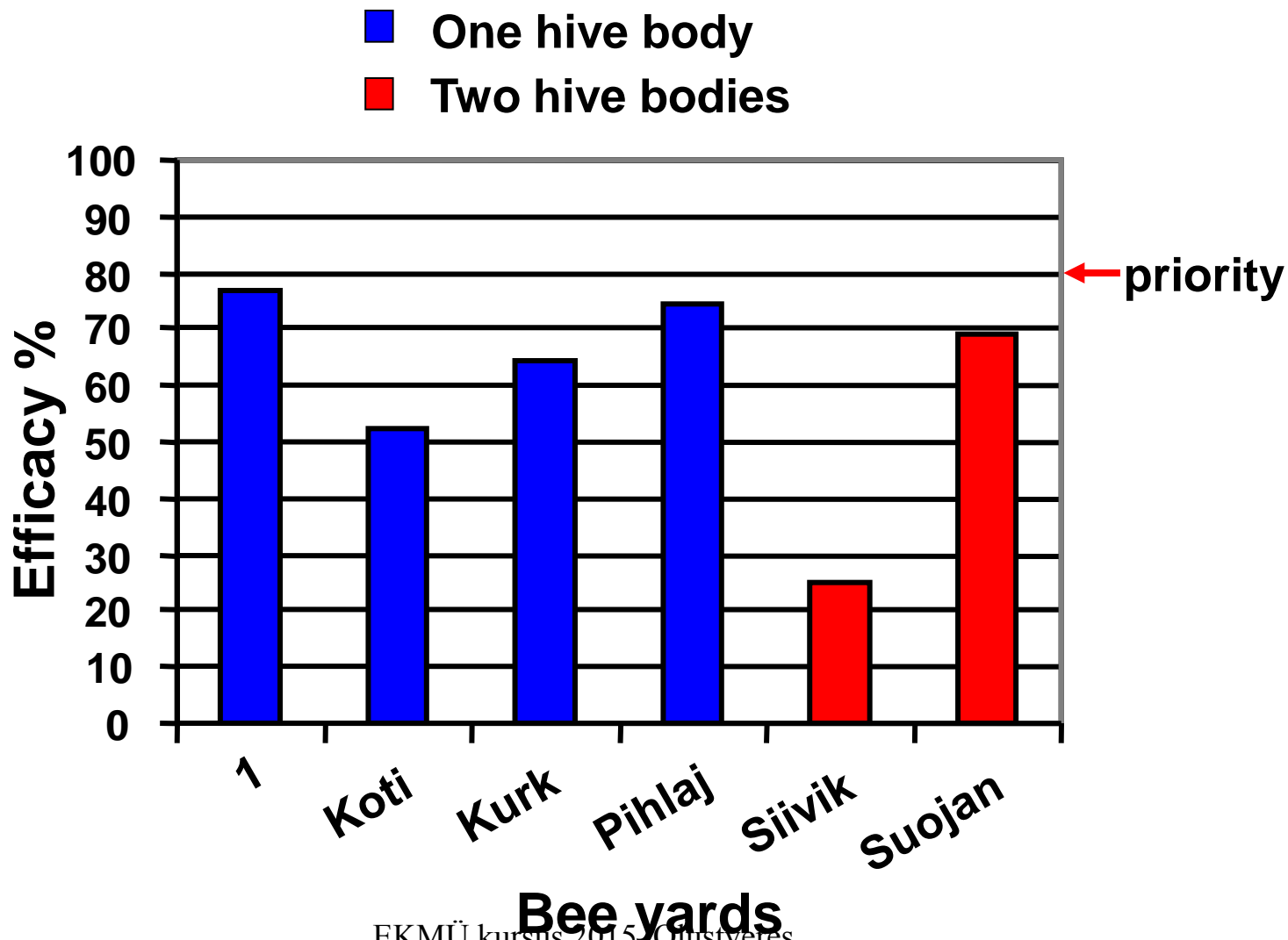
# Efficacy in different bee yards

## Thymol



# Efficacy in different bee yards

## Formic acid with Apidea plate 10 days

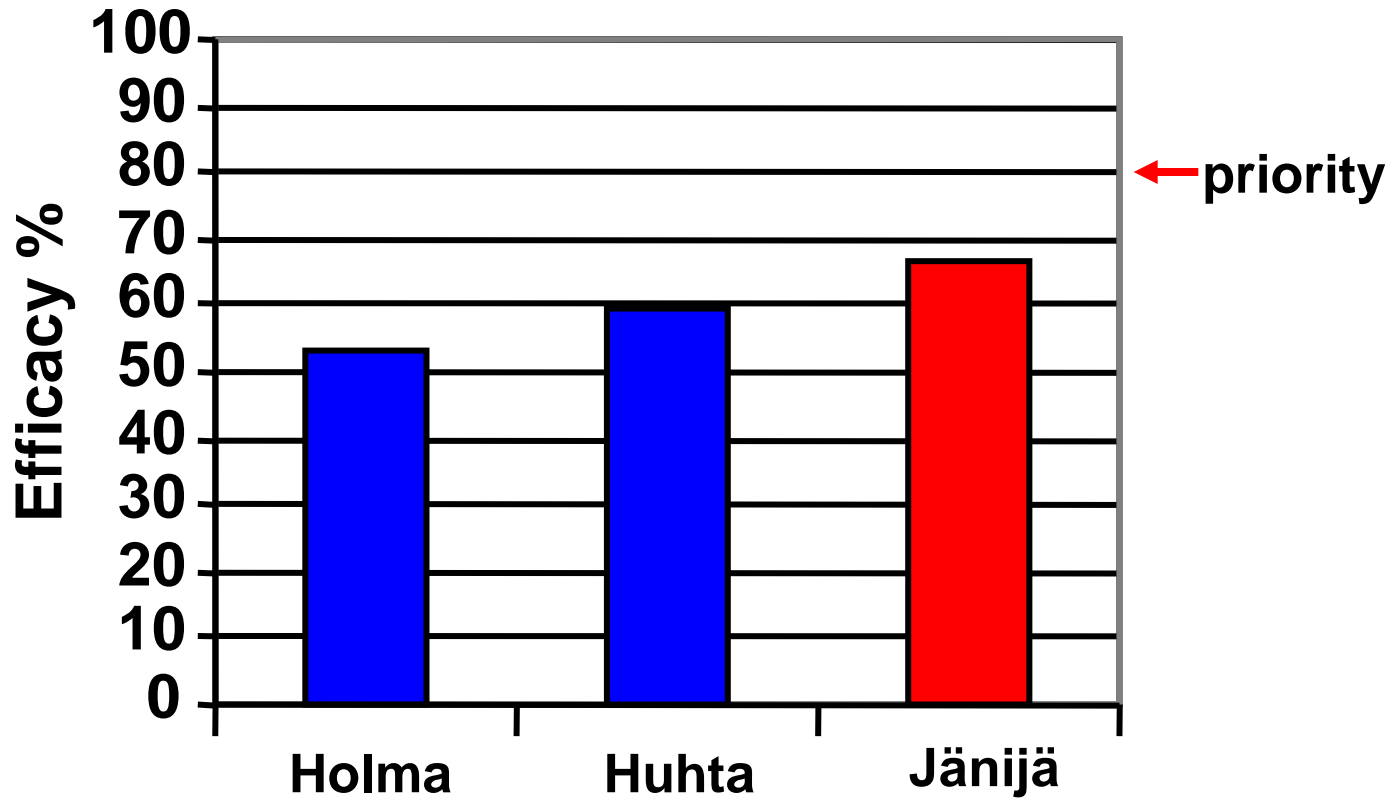


# Efficacy in different bee yards

## Short term formic acid

### 4 times with petri dish

- One hive body
- Two hive bodies



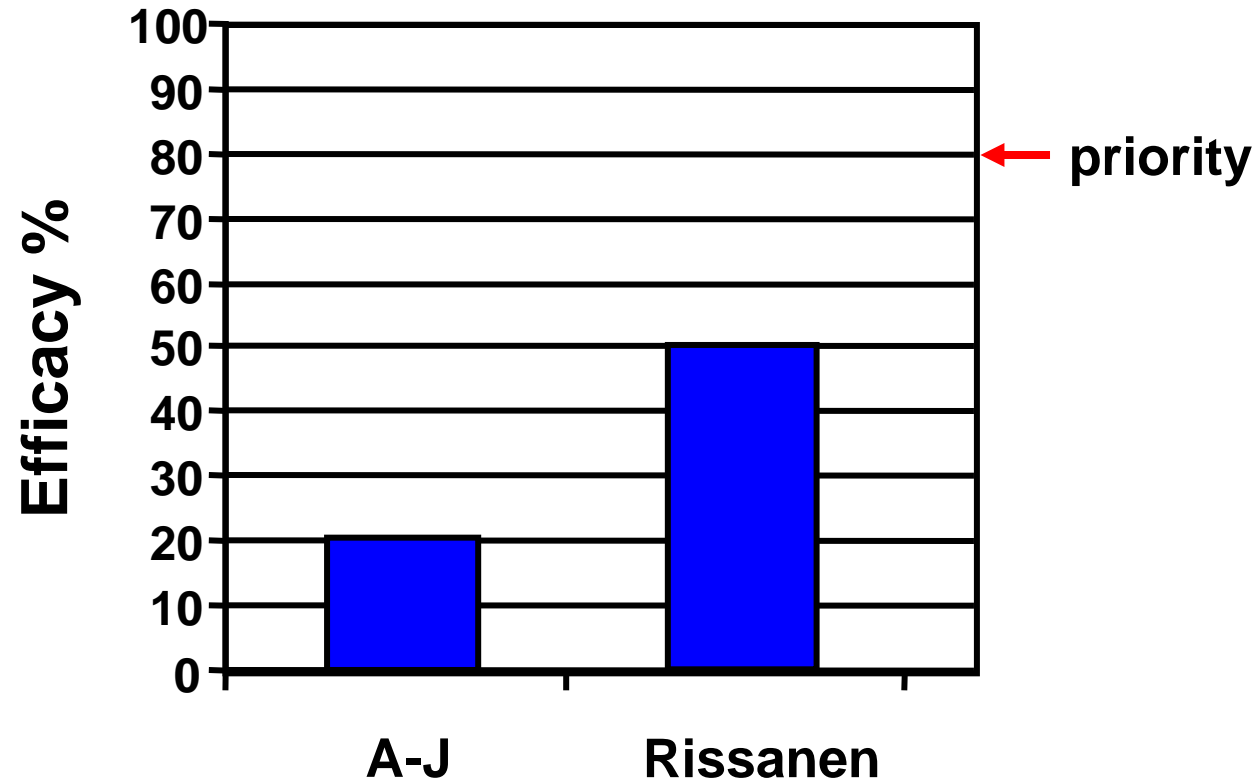
Bee yards

# Efficacy in different bee yards

Short term formic acid

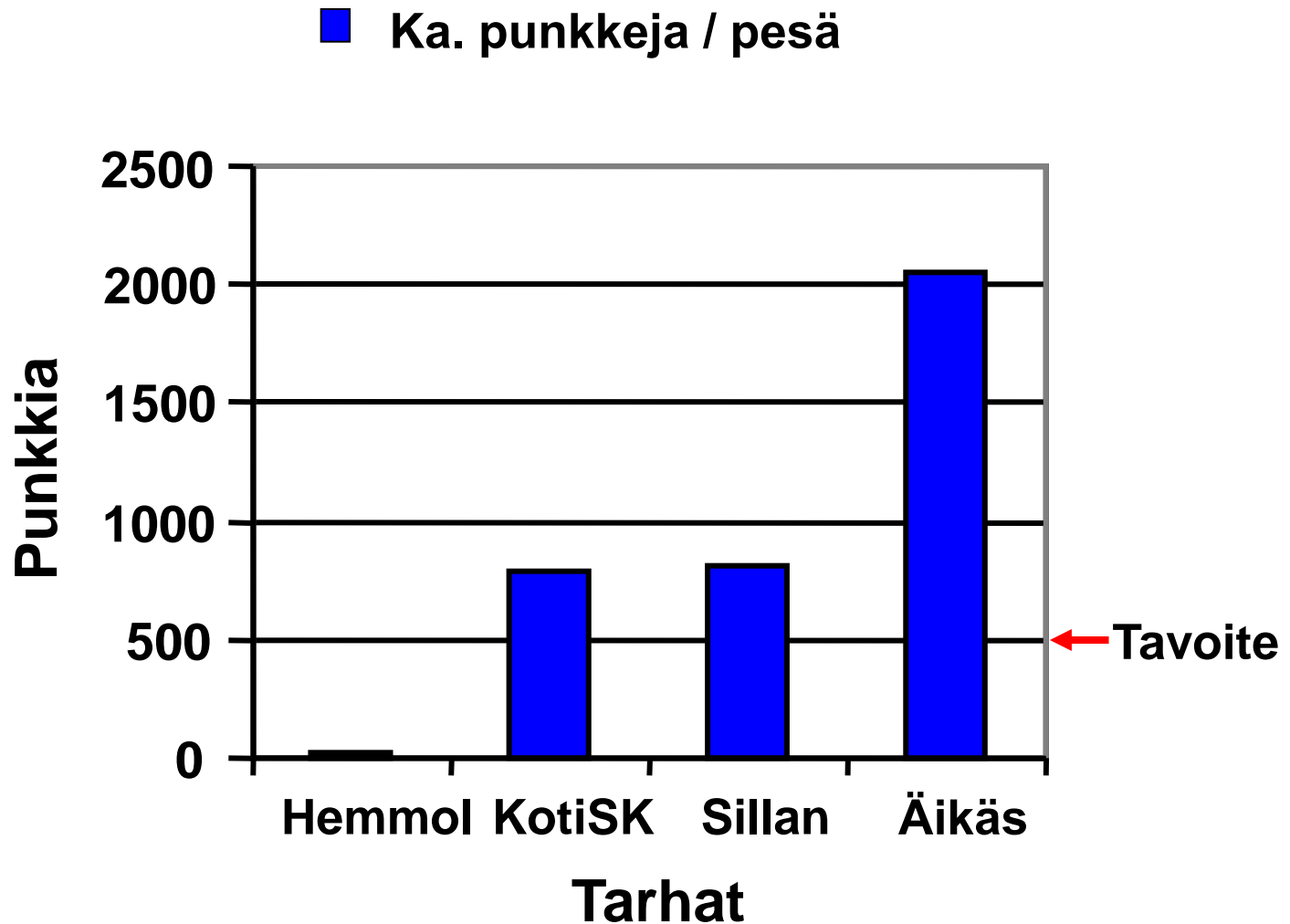
4 times with petri dish

■ One hive body

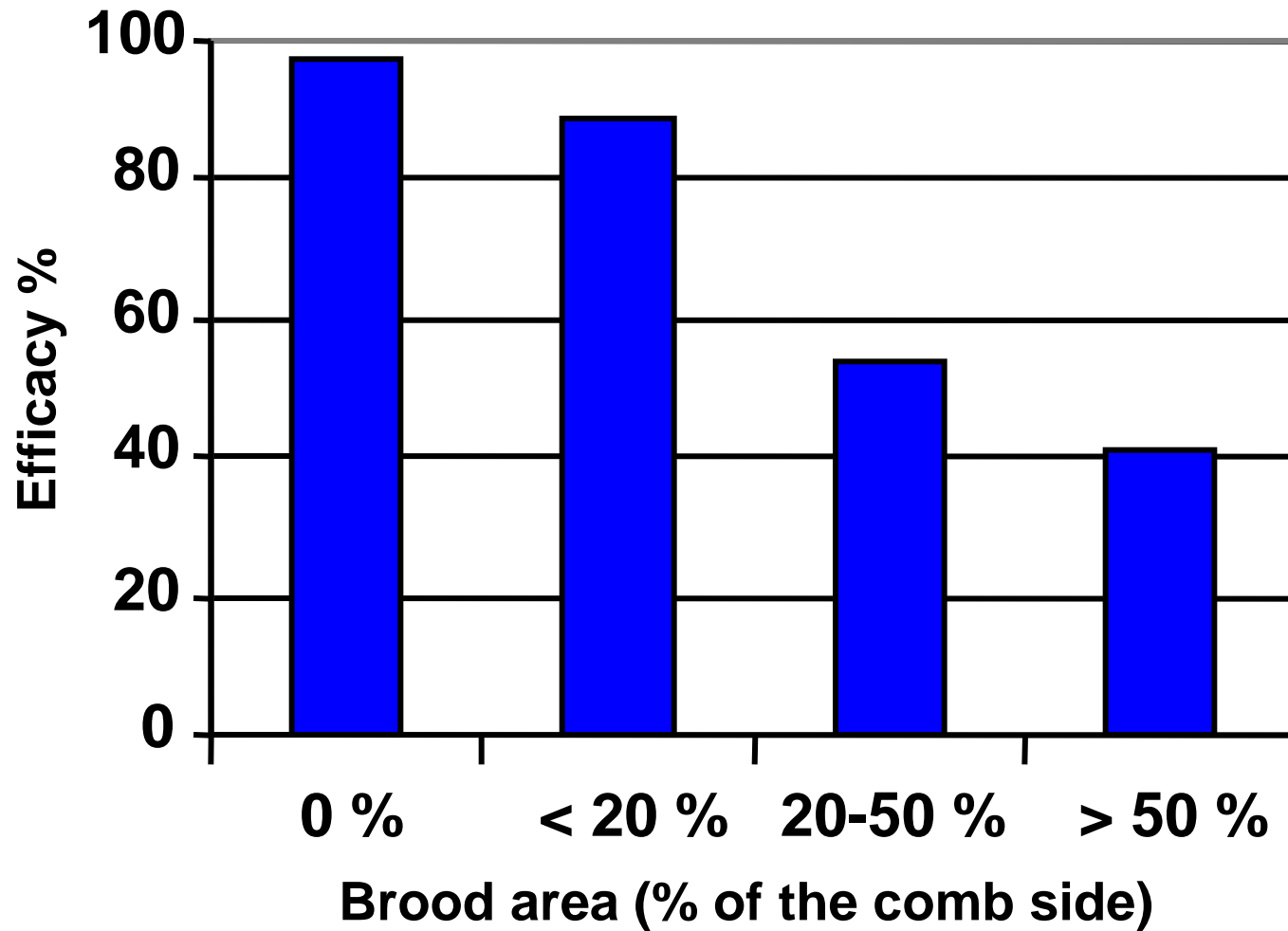


**Bee yards**

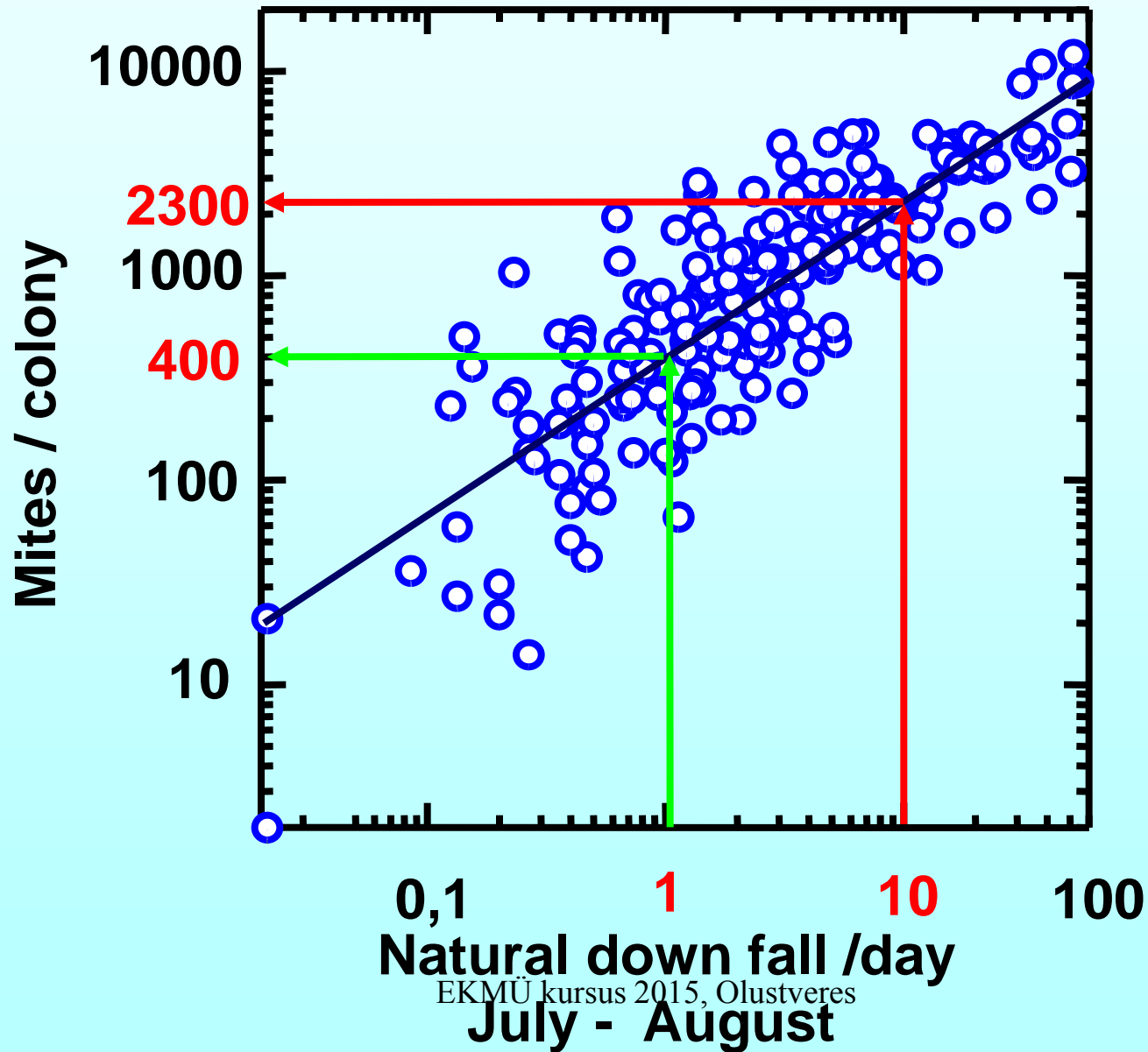
# Torjunnan teho eri tarhoilla Kuhnurikakkujen leikkaus



# Don't trickle oxalic acid if there are brood in the colony



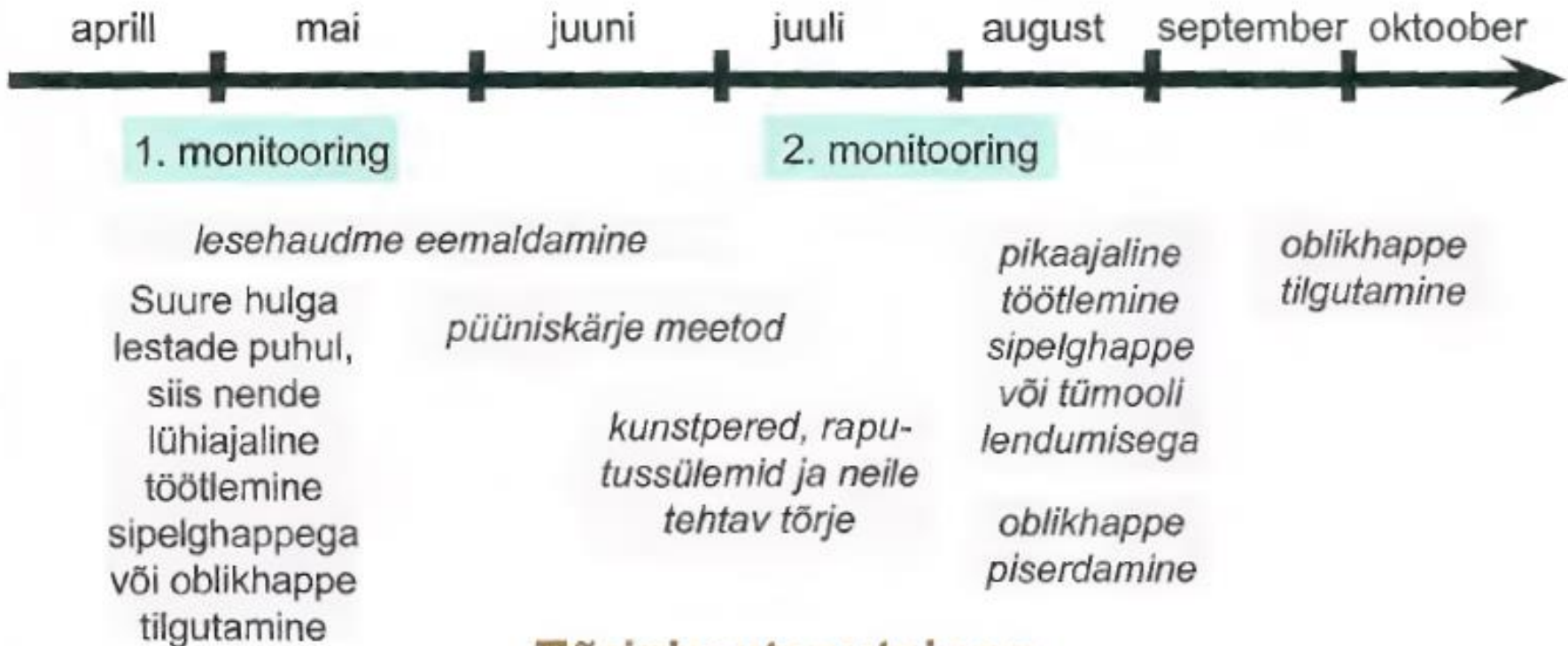
# Natural mite fall/day and total number of mites



EKMÜ kursus 2015, Olustveres

July - August

## Kokkuvõte erinevatest võrdväärtsetest tõrjemeetoditest ja nende ajastamisest mesindamishooajal



## Tõrjekontseptsioon

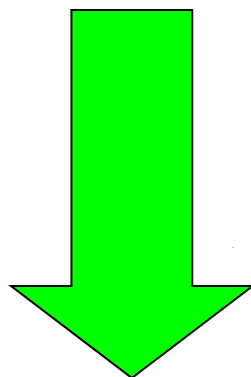


## Conclusions:

- 12 day formic acid treatment is efficient in august
- It can slow down the feeding behavior in beginning
- Thymol is easy and fast to give and needs 10 mm evaporation room above the wettex cloth
- Thymol does not have an impact to Acarapis
- Oxalic acid treatment in fall is routine
- Spring treatment with oxalic acid is increasing
- Swarms and nucleus during the season can also be treated with thymol or OA

# Miten torjua varroapunkki?

Arvioi luon. punkkikuolleisuus  
2 viikon aikana ennen hunajan korjuuta



Arvo	Pitkäaikainen esitorjunta	Oksaalihappotiputus
☀1		1x
1-10	1 x	1x
>10	2 x	1x