



MARTIN-LUTHER-UNIVERSITÄT
HALLE-WITTENBERG



breeding efforts on resistant honeybees

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Some past and contemporary attempts

Hygienic behaviour and resistance to American foulbrood

Walter C Rothenbuhler

**Varroa resistant/tolerant bees
on the island of Gotland**

Ingemar Fries

Nosema tolerant honeybees in Denmark

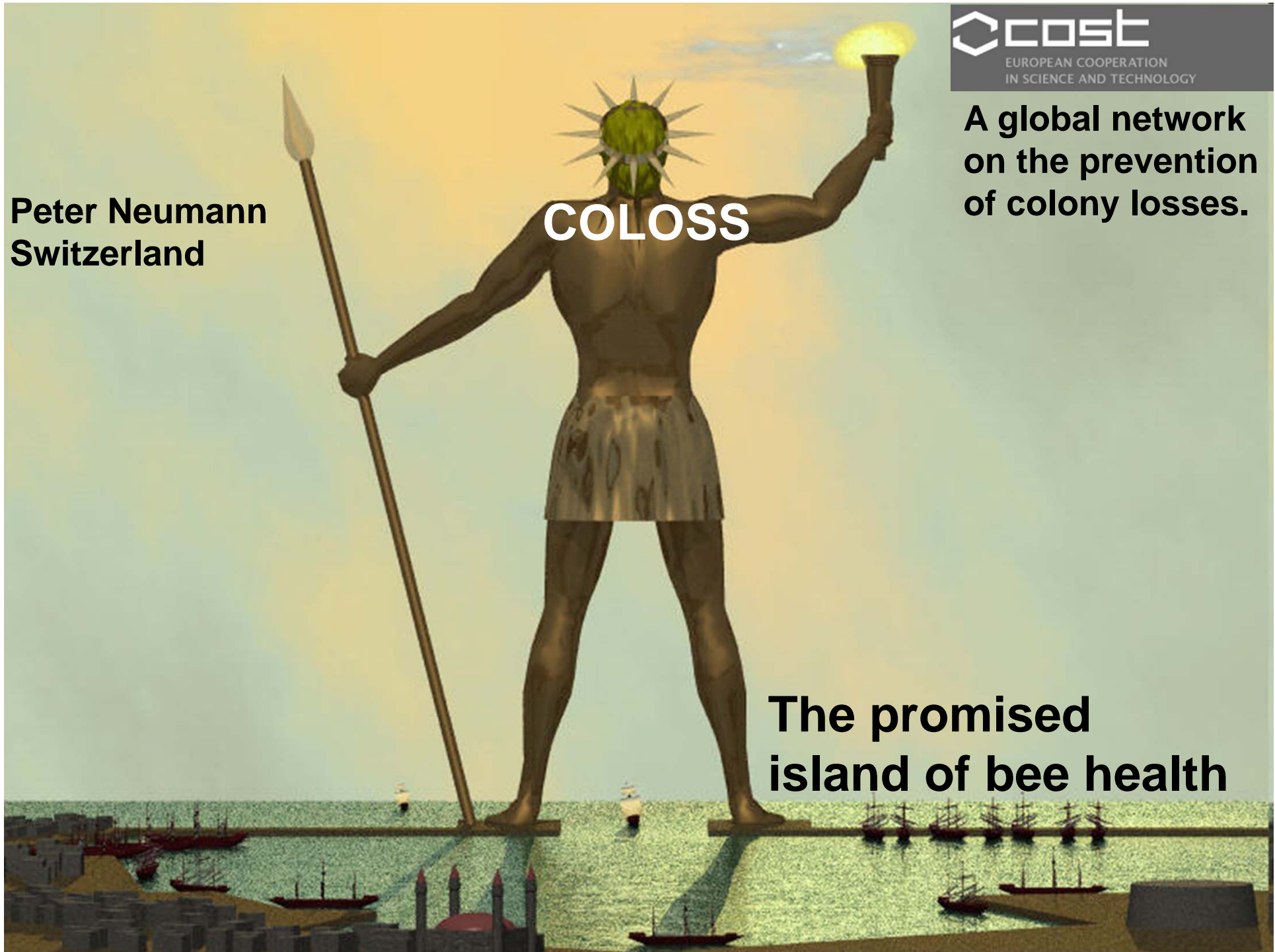
Per Kryger

**A global network
on the prevention
of colony losses.**

**Peter Neumann
Switzerland**

COLOSS

**The promised
island of bee health**

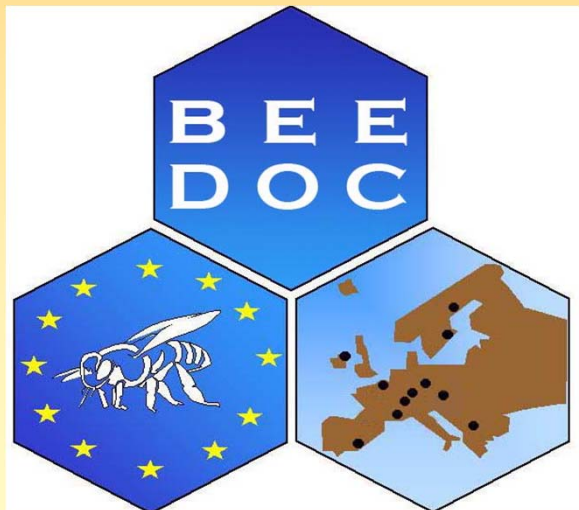




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BEE DOC - an EU-project on honeybee health



BEE DOC

Beekeeping in Europe and the Decline Of honeybee Colonies

emergence of new- or re-emergence of well known pathogens, as well as interactions with endemic infections and parasitism, in different European areas

Genomics knowledge of the bee genome and of some pathogens (such as viruses) will be used to differentiate and explore host-pathogen interaction.

Special focus will be on Nosema disease (*N. apis and ceranae*), viruses and the impact of Varroa destructor infestation.

Environmental factors, including chronic exposure to pesticides, as well as husbandry and management practices will be considered.

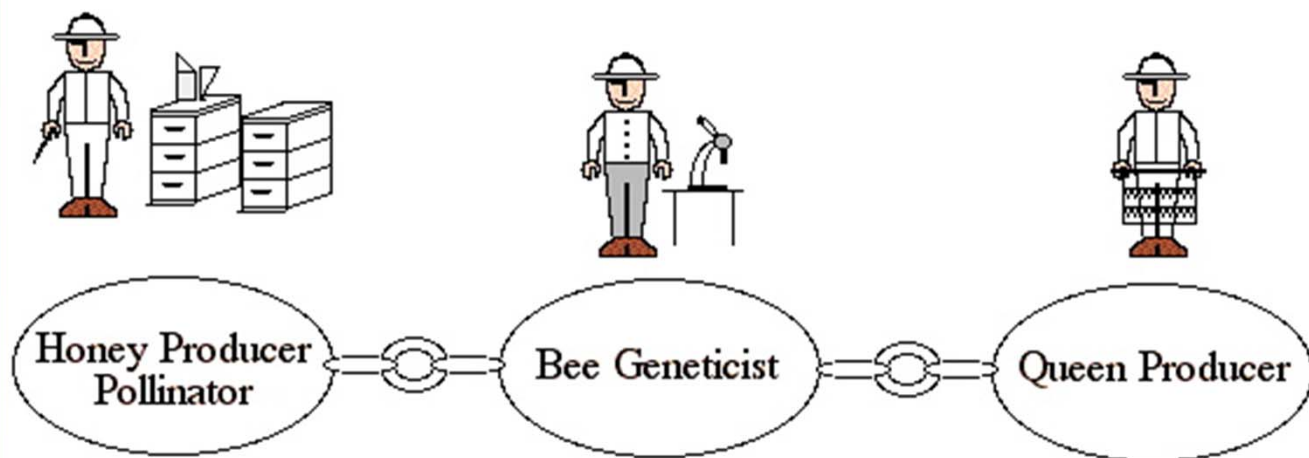
A gedanken experiment

This is her....

The ultimate queen that serves all your wishes.

**Never ill, never stings,
Makes tons of honey, pollen, royal jelly and propolis**

Links in the Chain of People and Tasks Necessary to Supply Better Bees to the Beekeeping Industry



Task:
Carry out field tests where stock is to be used.

Make plans:

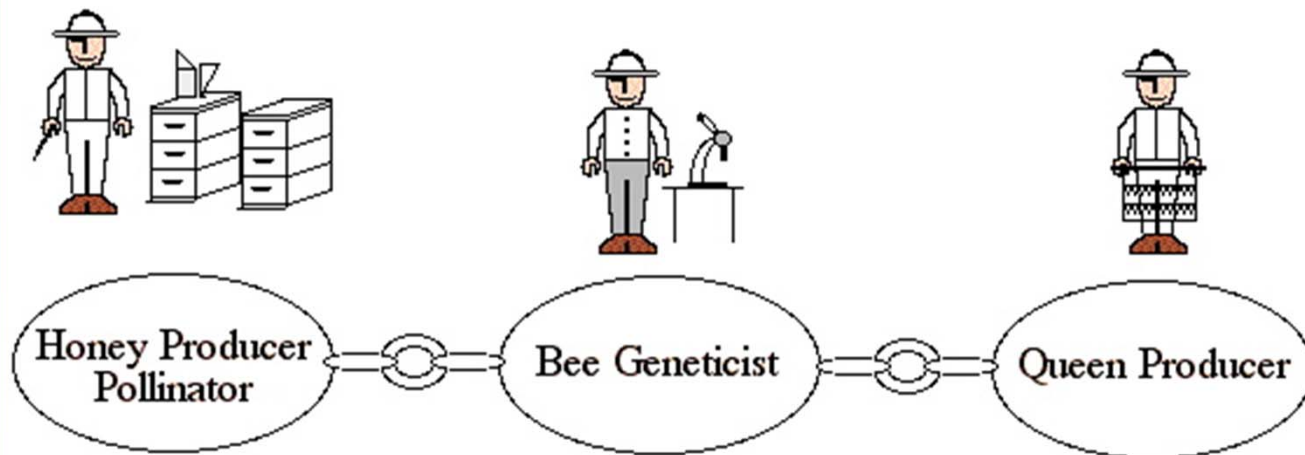
1. On how to get improved stock.
 - a. Decide how to do field tests
 - b. Select colonies to breed from
 - c. Decide when to use natural mating or artificial insemination

2. On how to maintain improved stock over the years.

3. On how to release improved stock.

Produce improved stock for sale to honey producers, bee producers, and/or pollinators.

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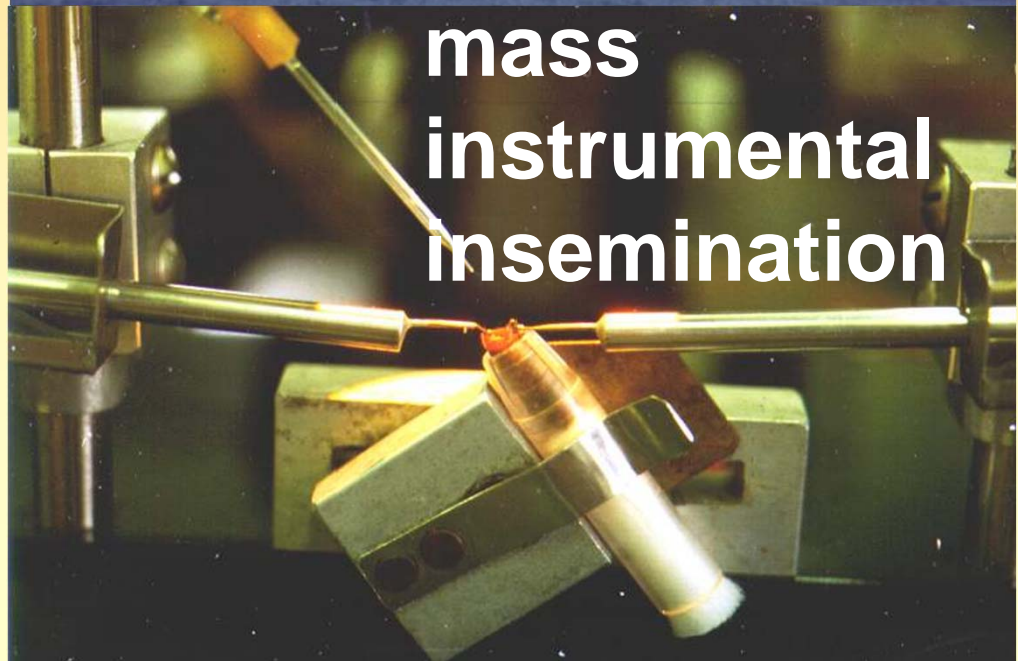
Produce improved stock for sale to honey producers, bee producers, and/or pollinators.



mass queen rearing

mass queen mating

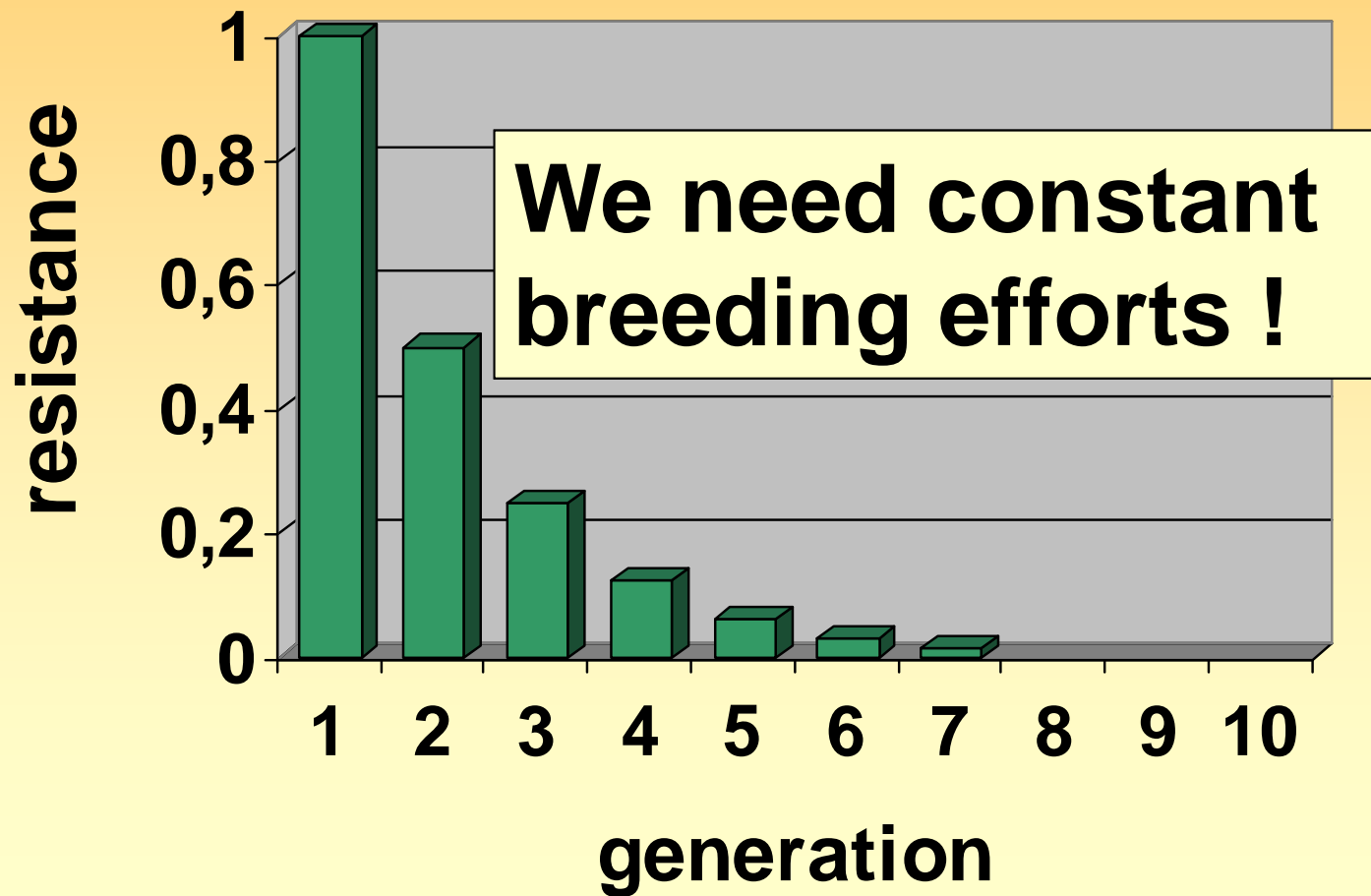
mass mating control



**mass
instrumental
insemination**

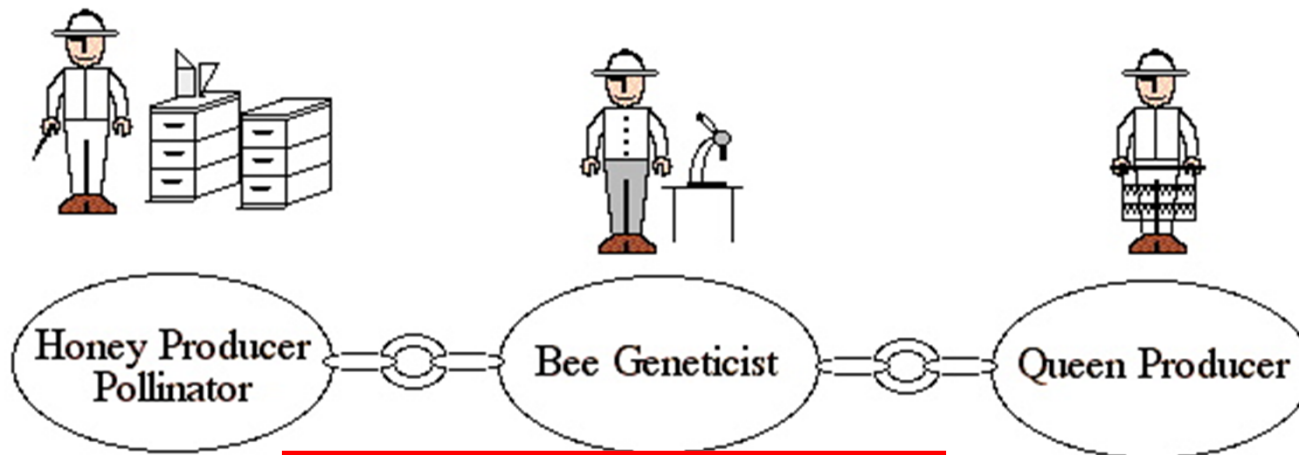


The fate of additive genes if you don't select





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Plans may not come so easy

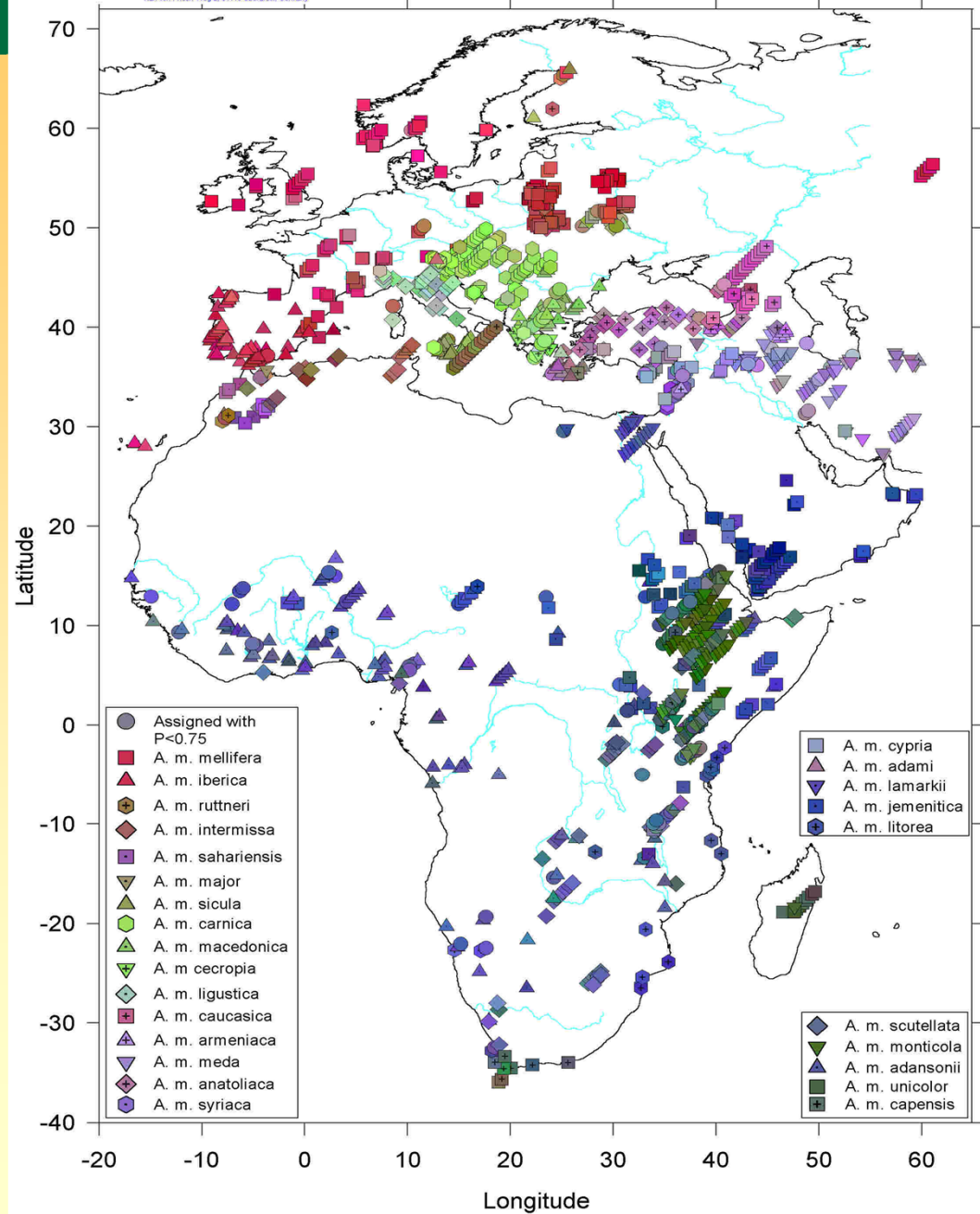
stock.



Do we want
„the best
honeybee“?



Honeybees (*Apis mellifera* L.) Variability and subspecies distribution





Diversity of apiculture, honeybees and habitats



This works at a regional scale
but not at a continental scale

Breeding requires continuous
regional efforts

field tests

a. Decide how to do field tests

stock for sale to

DNA tools will help with selection
but do not reduce the
regional breeding efforts



Africa is the continent with the least problems related to colony health.

With vast wild populations natural selection helps to prevent diseases

**Do not invest in
breeding efforts on resistant
honeybees in Africa**



Make beekeeping popular!

Let Africa take care of selection

Thank you