



Breeding Goals in Balanced Breeding Programmes



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LowInputBreeds



This Presentation

- EFFAB, FABRE TP, ATF
- Code-EFABAR
- Sustainable balanced breeding
- Input based differences & opportunities






European Forum of Farm Animal Breeders EFFAB

- European farm animal reproduction & selection organisations
- Cattle, pigs, poultry, aquaculture
- Research & research funding
- Knowledge & transparency
 - New technologies, diversity, welfare, sustainability
 - Patent watch
 - Code-EFABAR

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British United Turkeys



FABRE TP

Sustainable Farm Animal Breeding & Reproduction Technology Platform

- EU recognised
- 120 stakeholders
- Observer EAAP



- 4 Animal based TPs
- Research providers

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Sustainable Breeding

People, Planet, Profit

1. Ethics: where can we make a difference?

1. Food Quality and Safety
2. Diversity
3. Health and Welfare
4. Efficiency
5. Environment

2. Ethics: be transparent:

Based on **society** discussions
Close to **practice**: developed by breeders
For **umbrellas or individual** organisations



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Sustainable Breeding

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Sustainable Breeding

(How to strike the) **Balance**
Broadening Breeding Goal (incl robustness)
Overcoming antagonistic effects




Good traits
Powerful Computers
Data
Good Breeding Programmes

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Robustness

Both High and Low
production and sustainable breeding
are possible
in balanced breeding and production:



*The optimal animal for a defined production
system with fine-tuned management support*

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Broadening Breeding Goal

Due to more powerful computers and genomics it is/has been (more easily) possible to broaden the breeding goals

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Broadening Breeding Goal (Pigs)

- 2006 to 2010
- leanness
- growth
- feed efficiency
- sow lifetime productivity
- robustness & resistance
- behaviour

← 1980 - 2005 →

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Broadening Breeding Goal (Broilers)

Genetic Selection Criteria

1960
Live weight
Reproduction
Skeleton

Now
Skeletal Integrity
Eggs
Hatchability
Weight
Breast Meat
Meat Quality
Carcass Management
Growth Profile
Feed Conversion
Head/Liver/Fibrosis

From a few to up to 40 traits in breeding programme in 10 categories

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Improvements

e.g.:

- **Cattle:**
 - Scandinavian programmes (mastitis, year round calving)
 - Holstein: First results are encouraging: e.g. cow longevity increased 2000-2008 with 200 days (Netherlands)
- **Broilers:**
 - Tibial dischondroplasia in pedigree broilers in 2006 was 1/3 of TD in 1999 (Aviagen)

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Overcoming Antagonistic Effects

Powerful computers

- Integration **traits** with **good heritability** into truly sustainable breeding goals and programmes.
- Improve **genetically, simultaneously,** production, reproduction, efficiency, health and welfare traits via appropriate selection.

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Good Data

- 1. Quality and volume - Absolute prerequisites!**
 - A steady flow
 - *cost-effectively*
 - *reliably*
 - *repeatably* recorded traits on **thousands of individually identified pedigreed animals**, managed in a sophisticated data base
- 2. For transparency:**
 - to make visible (need for) improvements


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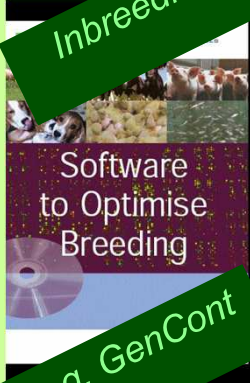


Small populations

(not specifically related to low input as such)



Inbreeding



Software to Optimise Breeding


e.g. GenCont

Less animals to select from
=
smaller improvements towards your goal
More difficult to overcome antagonistic effects

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Low Input Breeds



Cattle

Mastitis
Fertility (metabolic disorders)

Sheep

Extreme T
Imbalanced diet
Parasites
Mastitis

Pig

Piglet losses
Parasites
Heat stress


Laying Hens

Behaviour
Disease/parasites
Shelf life eggs

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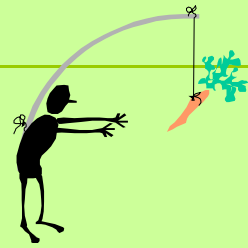
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Breeding Structures



- To get / organise data
 - Flower breeding pigs
 - Information practice layers, to structure the 70 % environmental effect
- Also important:
 - Adapted **management support**

The optimal animal for a defined production system with fine-tuned management support





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Low input:



niche or model for future livestock production

- Input-output
 - Efficient use of resources (per kg product), incl period of growing up
- Application in vulnerable areas
 - Mountain, other
 - Diversity of systems
- Global responsibility
 - Livestock revolution = upcoming economies will use more animal products coming 20 years



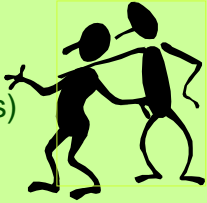
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Low and High input: *Striking the Balance*

- Each using own strength
 - Diversity of systems
- Cooperate, learn from each other
 - ▶ Mutual respect (not poke at others)



The optimal animal for a defined production system with fine-tuned management support

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Questions?

www.effab.info

www.fabretp.info

www.animaltaskforce.eu

FABRE • TP



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