

Application of Breeding Programmes



Modul no. 3: Animal Breeding

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Breeding Work

- Animal Recording
- Selection
- Breeding Programmes

Breeding Program

- system of breeding procedures leading to a change of those traits and characteristics, which determinate fulfilling of the breeding goal
- *by the preservation of good health and economics of breeding*

The formal structure of a breeding program

- *biological*
- *technical*
- *economical*



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The formal structure of a breeding program

- Biological part
 - *Breeding goal*
 - *Systems of trait recording*
 - *Methods of evaluation of animal recording data*
 - *Types and Methods of selection*
 - *Breeding methods*
 - *Evaluation of the program*



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The formal structure of a breeding program

- Technical part
 - *Evaluation of existing technical equipment*
 - *Planning of new technical equipment*
(facilities, laboratory devices, etc.)
- Economical part
 - *Economic evaluation of the main alternative of the breeding program*



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Species-specific issues

- *Level of industrialization*
- *Direction of production*
- *Intensity of reproduction*
- *Duration of use of animals for breeding purposes*
- *Range of breeding*



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Breeding programmes in cattle

- Classical
 - *large active population*
 - *whole population animal recording*
 - *high intensity of selection*
- Modern
 - *biotechnolgy of reproduction*
 - *nucleus*
 - *open*
 - *closed*

- Aim
- *selection of:*
 - *sires-of-sires*
 - *sires-of-dams*
 - *dams-of-sires*
 - *dams-of-dams*
- *test of young sires*

- *impact of selection pathways on genetic improvement of the population/ breed*



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Breeding programmes in cattle

- Systems of the utilisation of sires:
 - Proven sires systems
 - long-term ID preservation
 - ~~„waiters“ systems~~
 - Young sires systems



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Breeding programmes in cattle

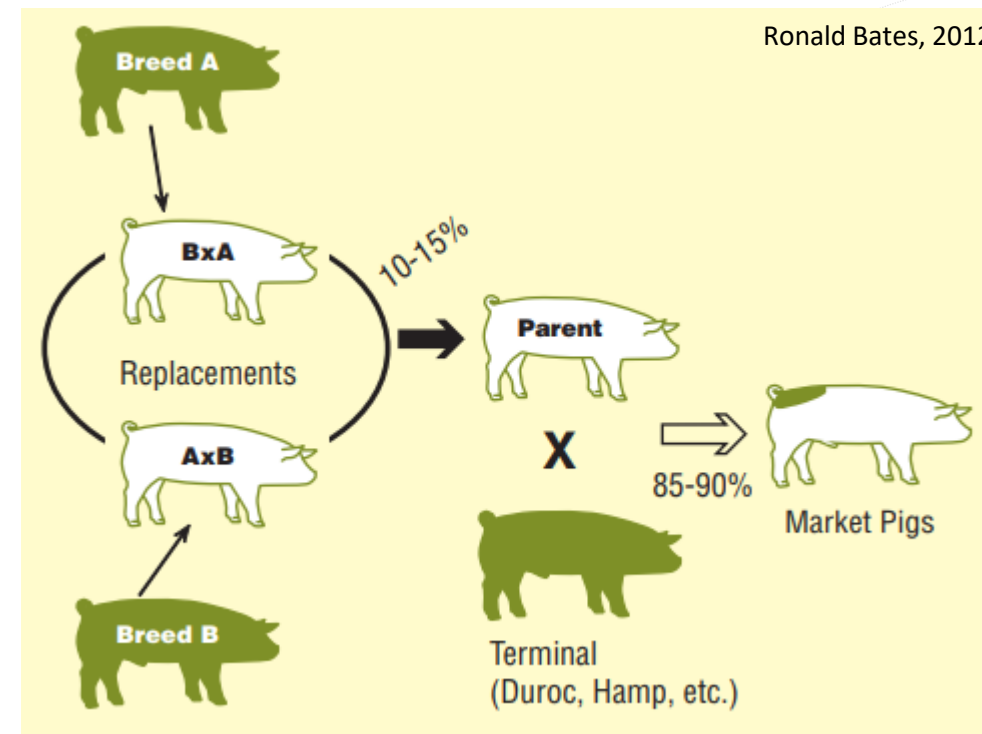
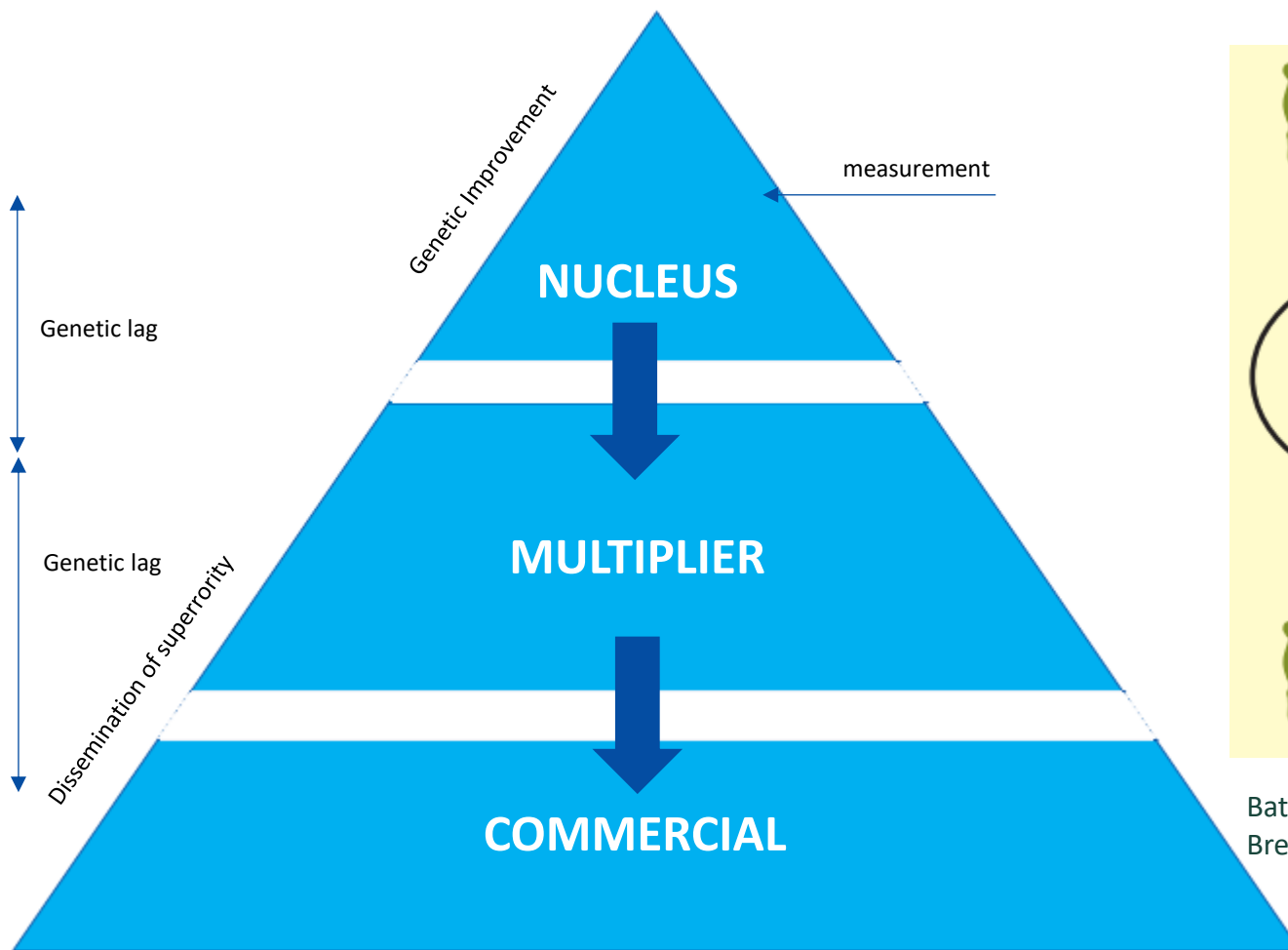
- Multiple Ovulation and Embryo Transfer (MOET)

Month	Juvenile	Adult
1	Birth	Birth
13	Selection based on pedigree, MOET	
15	Insemination	Insemination
22	Birth of MOET progeny	
24	Calving	Calving
34	End of 1st lactation	End of 1st lactation
35	Selection of progeny	Selection of cows, MOET
36		Insemination
44	Birth of progeny MOET grand-sons	Birth of MOET progeny



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Breeding pyramid



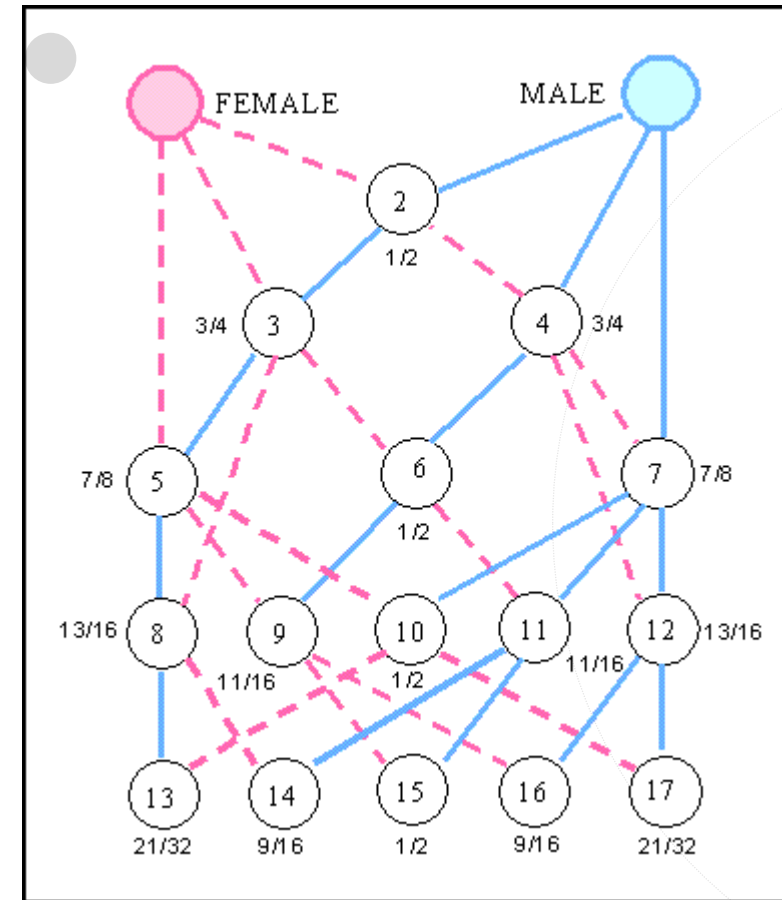
Bates, R.(2012): Swine Breeding Systems for Alternative Pork Chains: Breeding Programs



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Mating programmes

- *General*
 - *mating of dam-dams*
- *Specific*
 - *Elite mating*
 - *Test mating*
 - *Correctional mating*
 - *Compensation mating*
- *Homogenous*
- *Heterogenous*



Sawyer, J: Line breeding guide
fbcdn-sphotos-e-a.akamaihd.net



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Evaluation of Breeding Programmes

GENETIC EVALUATION

- *Genetic gain*
- *Heritability*
- *Genetic trends*

ECONOMIC EVALUATION

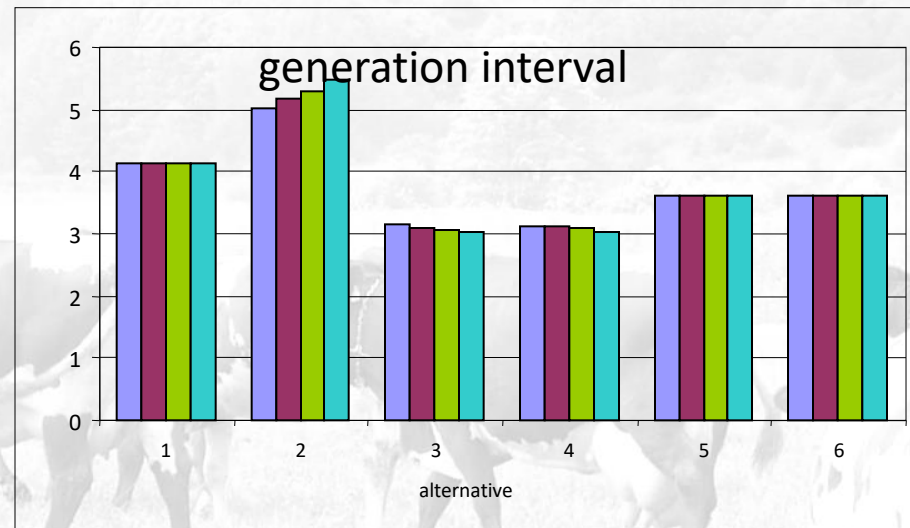
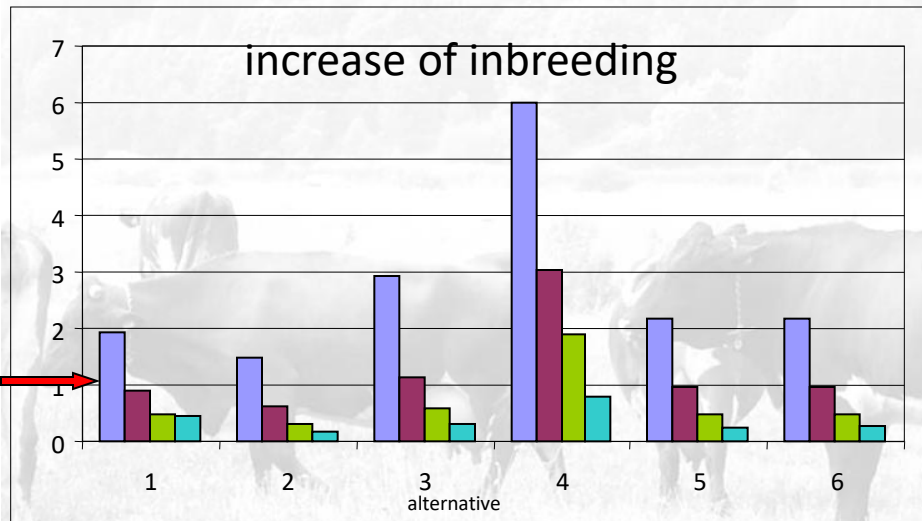
- *Profit*
- *Performance efficiency*

Relationships between genetic and economic indicators

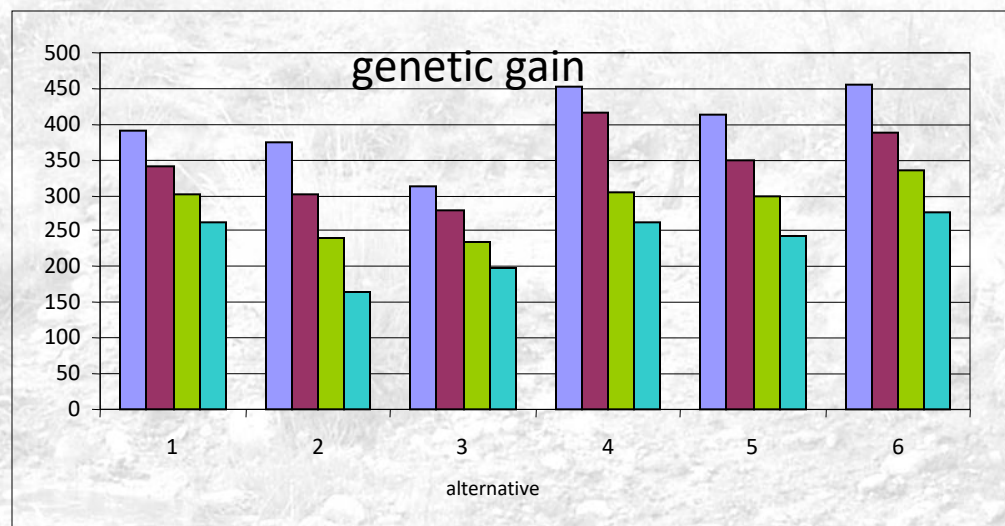


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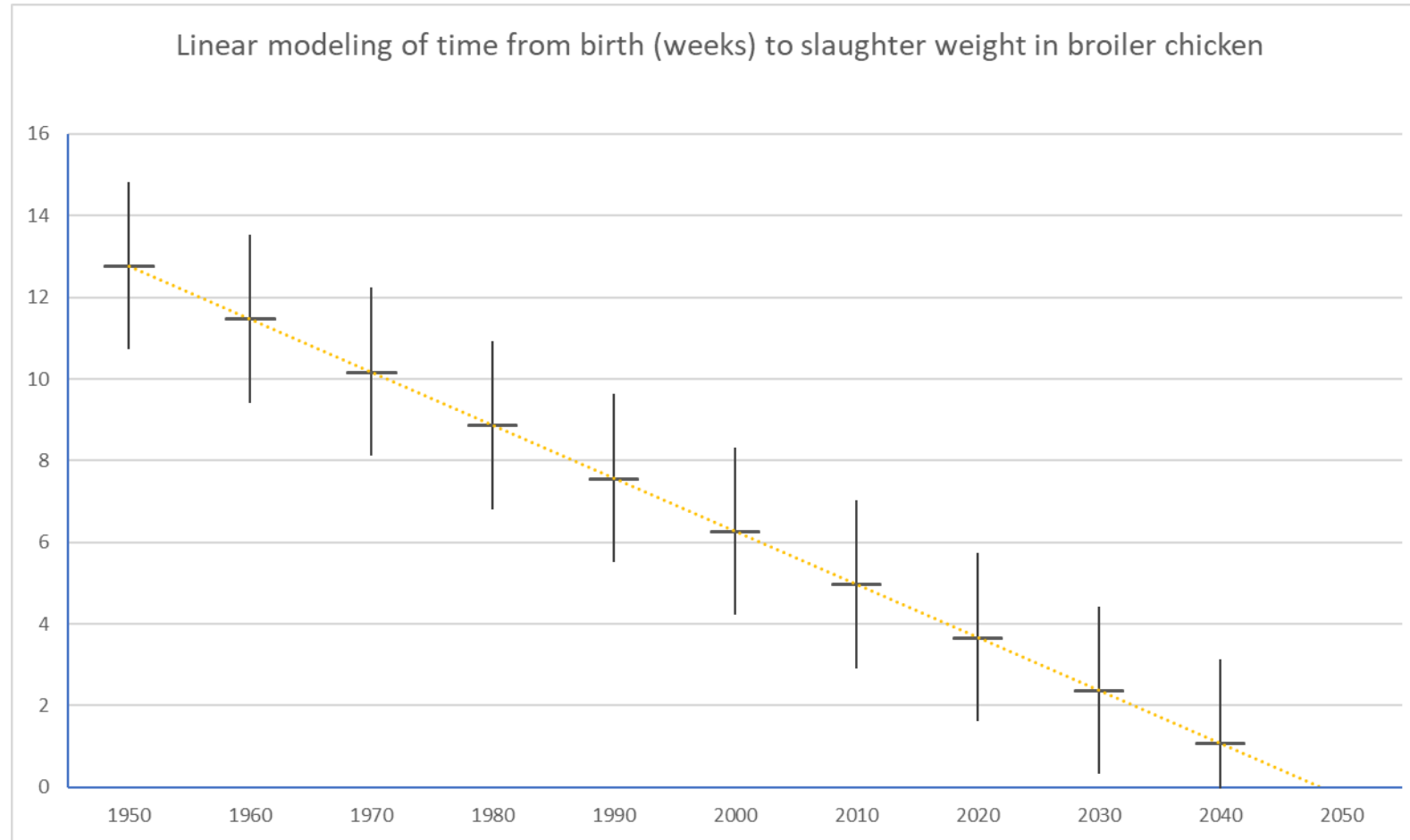
Evaluation of alternative design



2 sires
5 sires
10 sires
20 sires



Biological Aspects of Animal Breeding



Breeding work in small populations

Basic aim:

1. *preservation and competitiveness ability of small populations*
2. *preservation of breed type, whereas is it, not an economic goal*
3. *stronger use of biotechnical advances*
4. *increase of reliability of sire dam selection*
5. *shortening of generation interval on male and female sites via earlier decisions in selection*
6. *extension of animal recording in females*
7. *upgrading of own performance recording in males*



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Partners:



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Thank you for your attention!

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