

Session: G4.9
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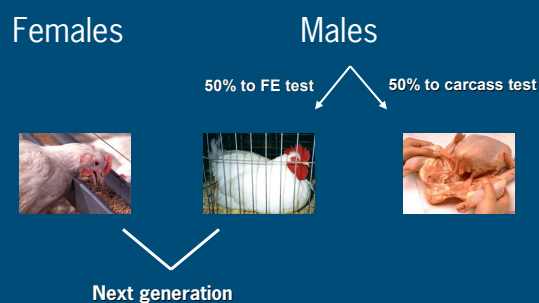
Genetic improvement in broilers using indirect carcass measurements

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Current broiler breeding scheme (paternal line)



Carcass information only come from relatives !

Introduction1:

Indirect carcass measurements:

- Methods for collecting body composition in live birds.

Different types of indirect methods are available:

- Dimensional measurements:

Breast width

Breast length

Breast thickness

- Ultrasonic:

- Imaging techniques:

Tomography scan (CT)

Magnetic resonance (MRI)

Echography

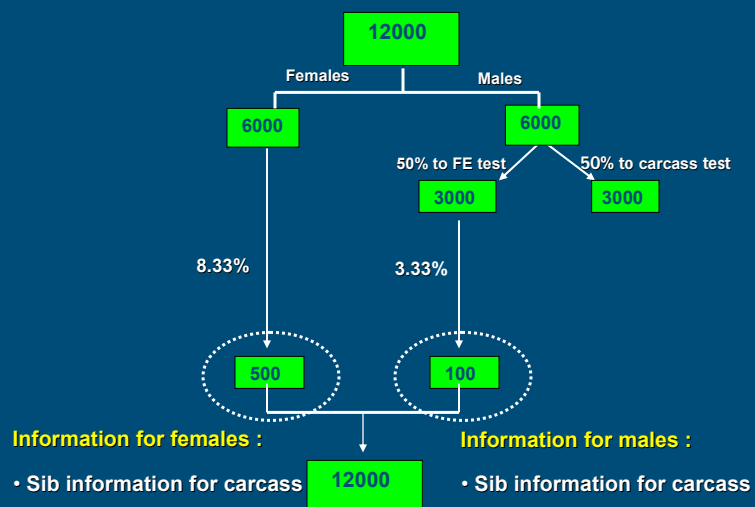
Objective:

The effect of indirect carcass methods on the genetic response and rate of inbreeding.

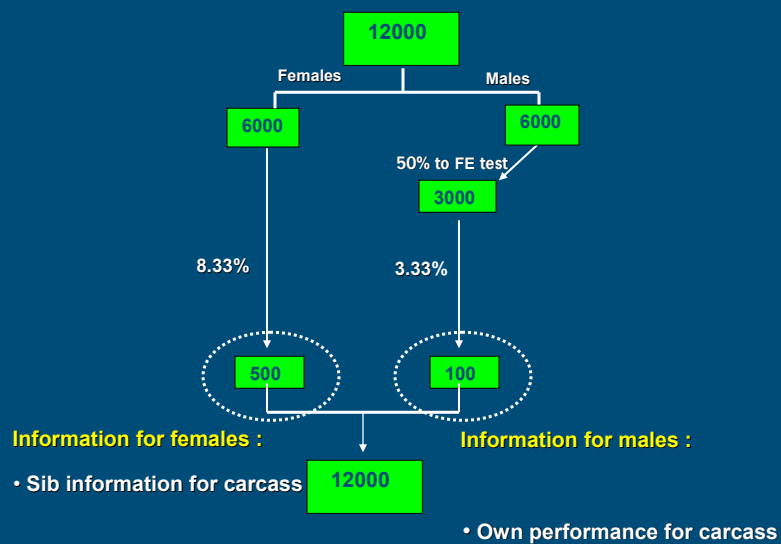
Methods 1:

- A scheme without indirect breast measurements (base scheme).
- Three alternative schemes with indirect breast measurements (A, B, and C).

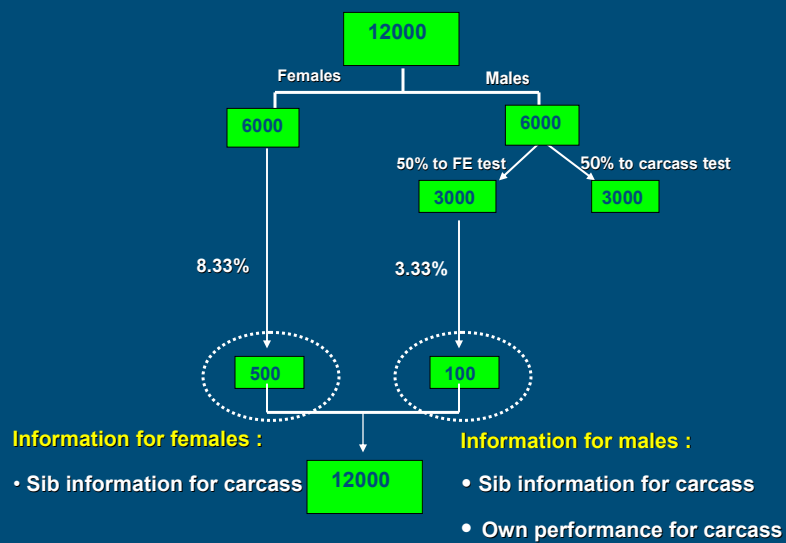
Base breeding scheme



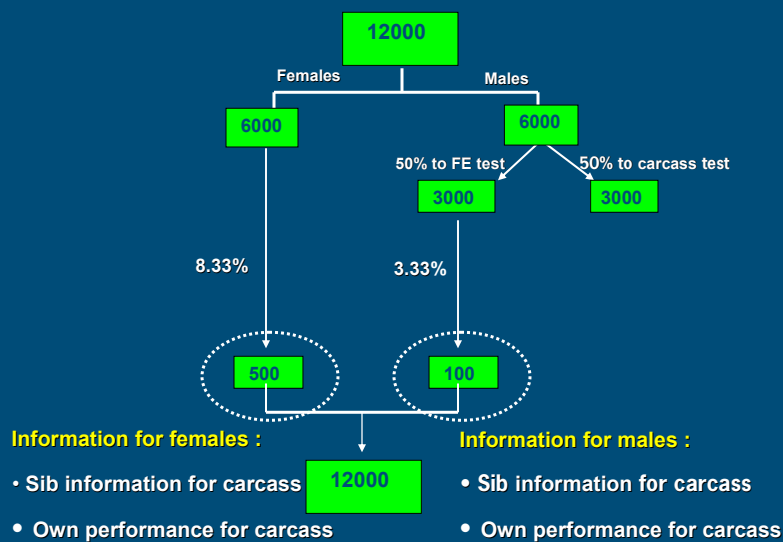
Scheme A



Scheme B



Scheme C



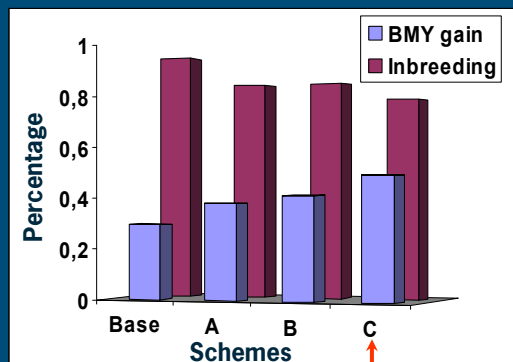
Methods 2:

- Breeding goal traits:
BW at 42 d (**BW42**), and breast meat yield (**BM**) with weights of **0.33**, and **0.06** respectively.
- Index traits:
BW42, **BM**, and indirect breast meat yield (**INBM**).

The SelAction program (Rutten et al., 2002) was used.

Results1:

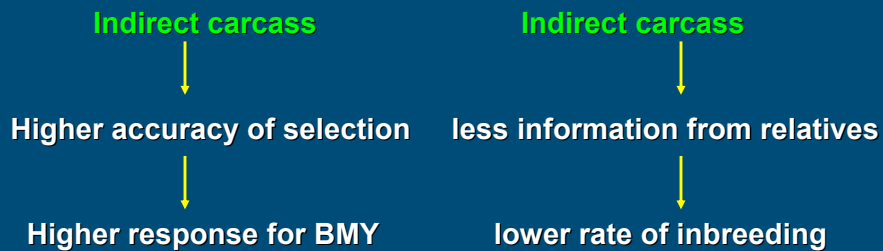
Genetic gain and rates of inbreeding in base and alternative schemes



66% higher response for breast meat yield

Discussion 1:

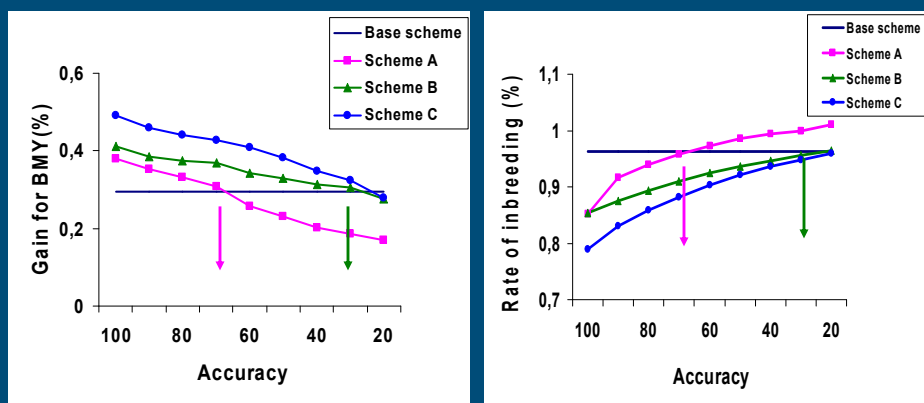
Indirect carcass measurement:



Accuracy of indirect measurements:

- A 100% accuracy of measurements was assumed for indirect measurement methods (indirect = direct).
- Different accuracy of measurements (90% – 20%) were simulated in alternative schemes.

Results 2:



Reduction in the accuracy results in reduced response for BM and increased rate of inbreeding.

Reduction in the accuracy of indirect measurement influences scheme A more than scheme B, and C

Discussion 2:

- Scheme A is more influenced by accuracy of indirect methods than scheme B and C.

Only very accurate methods are useful in scheme A, but methods with low accuracy are still useful in schemes B, and C.

Discussion 3:

Indirect methods, specially imaging techniques (CT scan, MRI) can be used to improve the health of birds (leg and cardiovascular system).

Interesting for sustainable broiler breeding programs.

Conclusions:

- Indirect carcass measurements can improve the genetic response and reduce the rate of inbreeding.
- Schemes with direct + indirect carcass measurements are more reliable.