

Challenges in the new breeding schemes with use of effective Genomic Selection

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Challenges

- **How do we make best use of genomic information?**
- **What are the risks?**
- **Are we willing to take the risk?**

How do we use genomic breeding values?

- **Bulls to breed cows**
- **Bulls to breed bulls**
- **Cows to breed bulls**

Bulls to breed cows

Test bulls (young bulls)

Progeny tested bulls (proven bulls)

Worst Case: GS doesn't work!

⇒ Increased young bull percentage

⇒ No large impact on genetic gain

Best Case: GS does work!

⇒ Farmers will use better bulls

Bulls to breed cows

- **Conventional**

- 70% Proven bulls
- 30% Young bulls

- **Average NTM: 28.5**

- 25 bulls

- **GenVikPlus**

- 50% Progeny tested bulls
- 20% Test bulls
- 30% GenVikPlus bulls

- **Average NTM: 30.3**

- 15 Progeny tested bulls
- 30 GenVikPlus bulls

How to use GenVikPlus bulls?

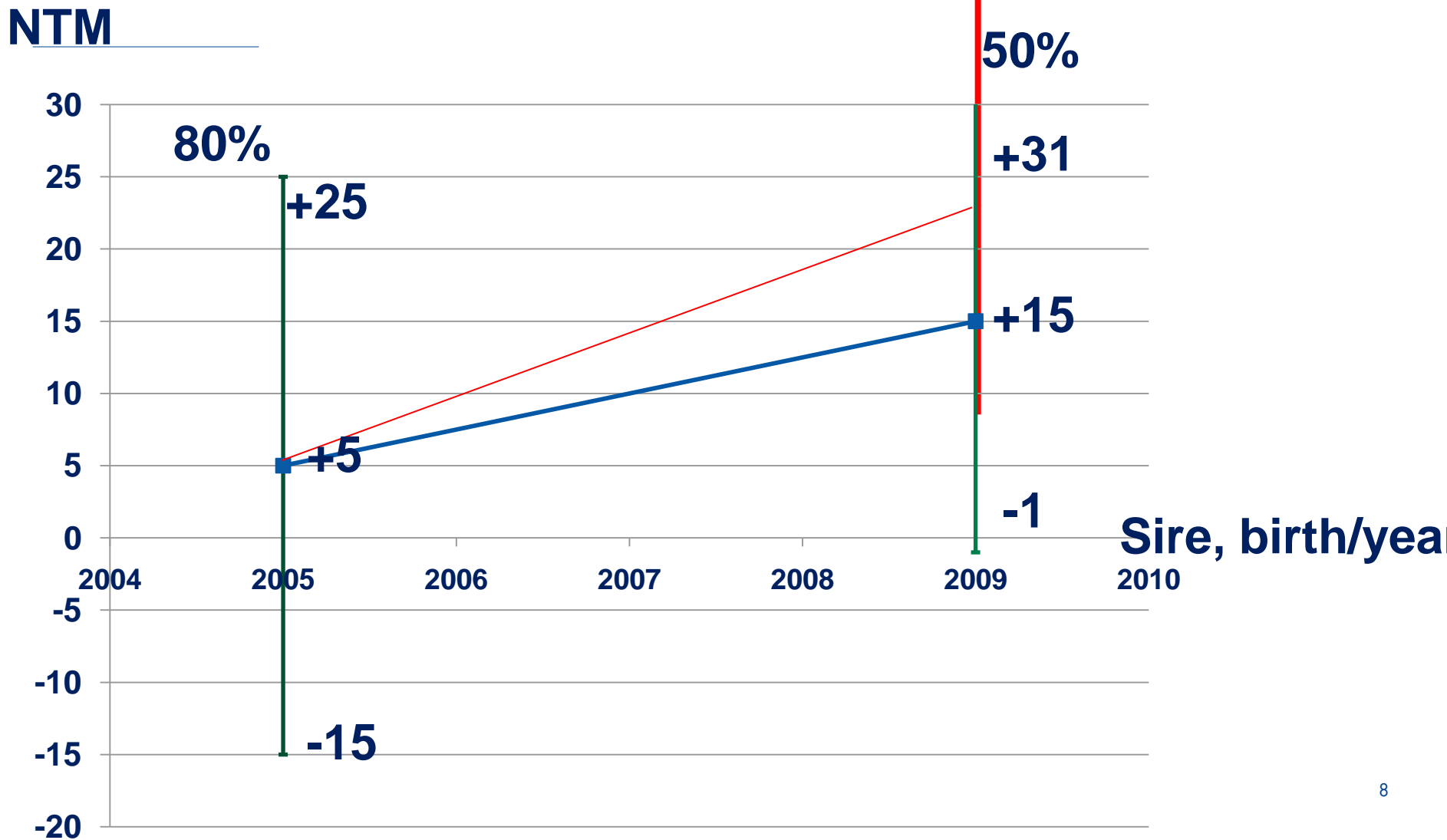
- Use them in groups
- Use several

Bulls to breed bulls

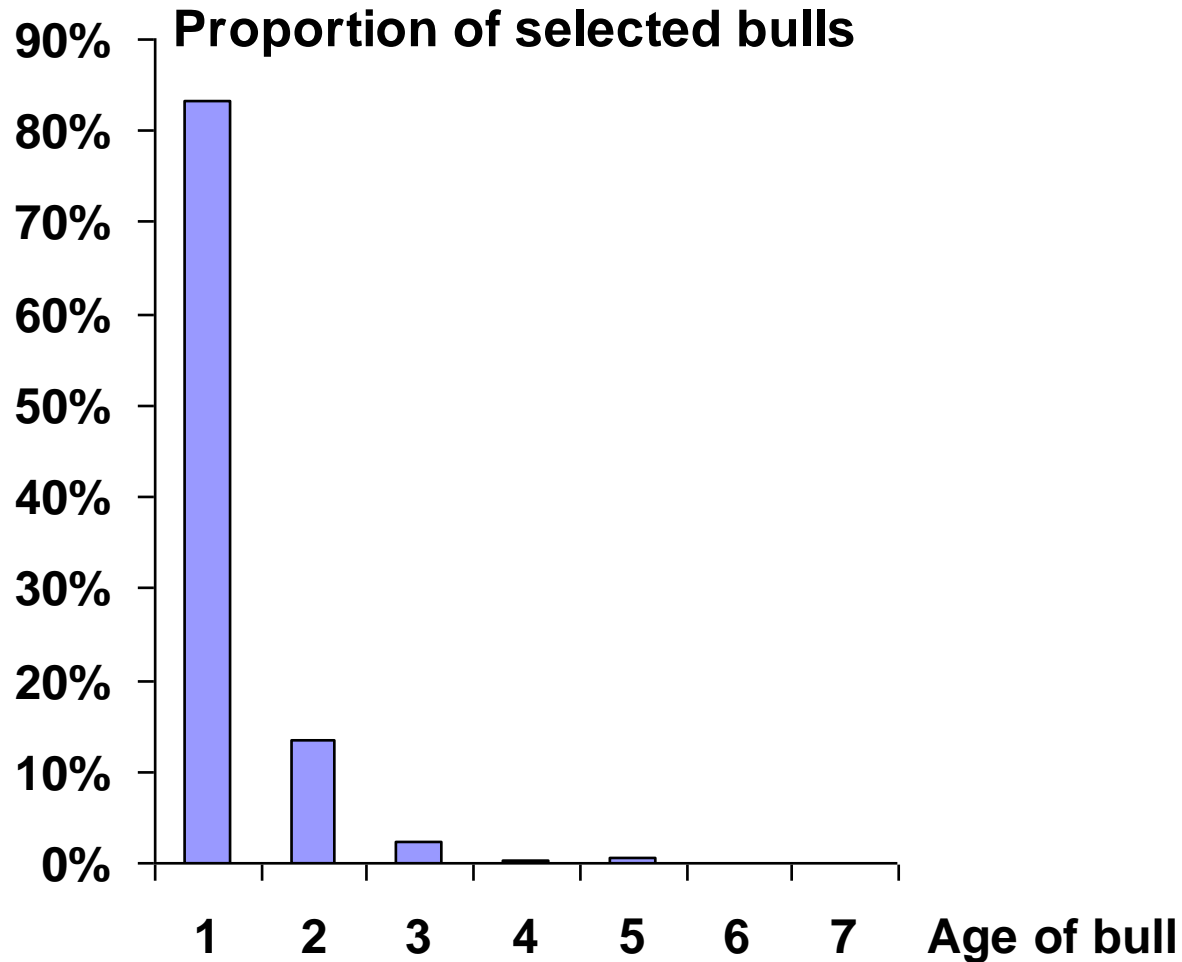
GenVikPlus bulls (young bulls)

Progeny tested bulls (proven bulls)

Variation in NTM among bulls



Bulls to breed bulls



How to use GenVikPlus bulls?

- Use them in groups
- Use several

Unbalanced use of bulls

Relative to 30 bulls used equally

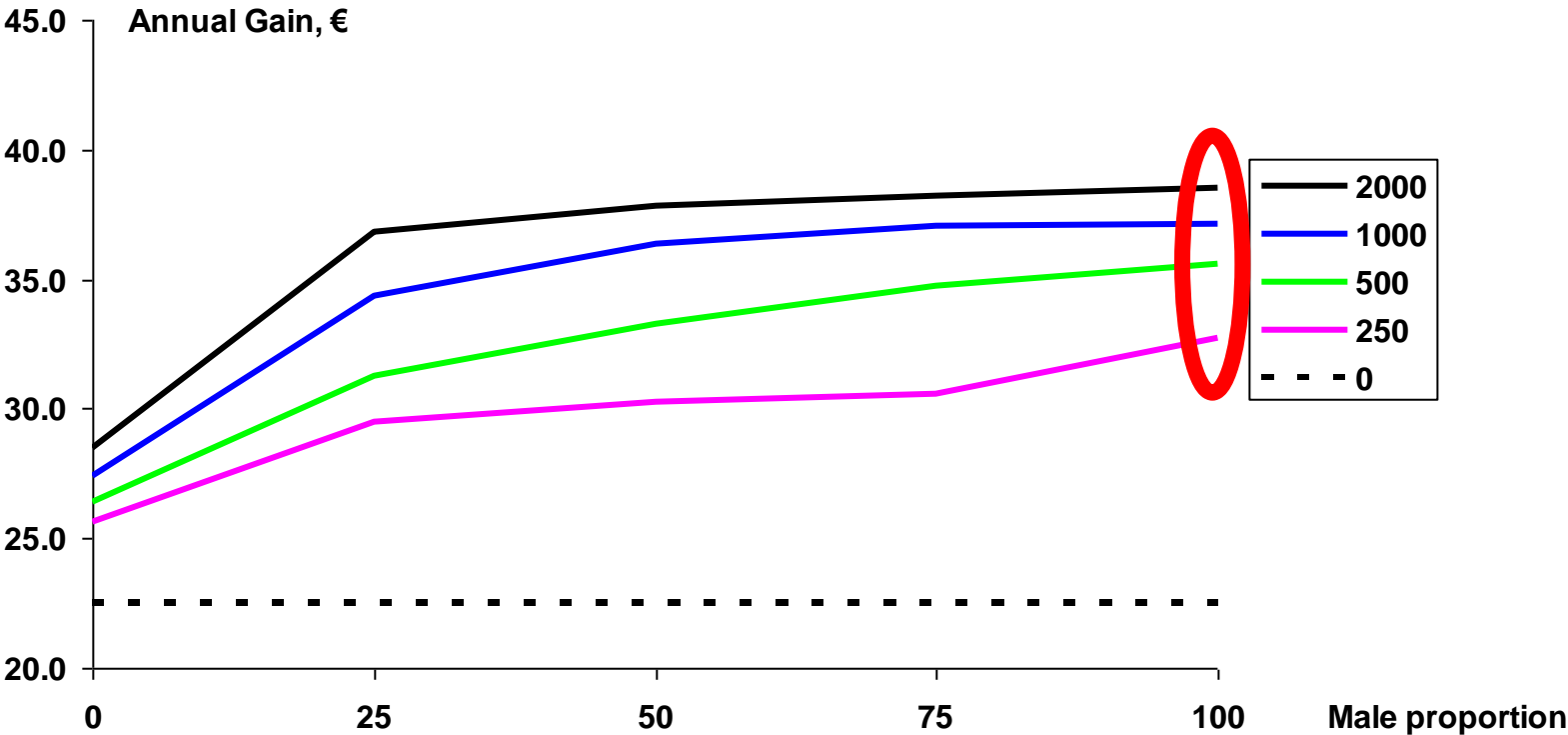
More balanced ↑

Best		Gain	Inbreeding
20	90%	102	121
15	75%	102	122
10	60%	103	134
5	50%	104	188
5	75%	104	254

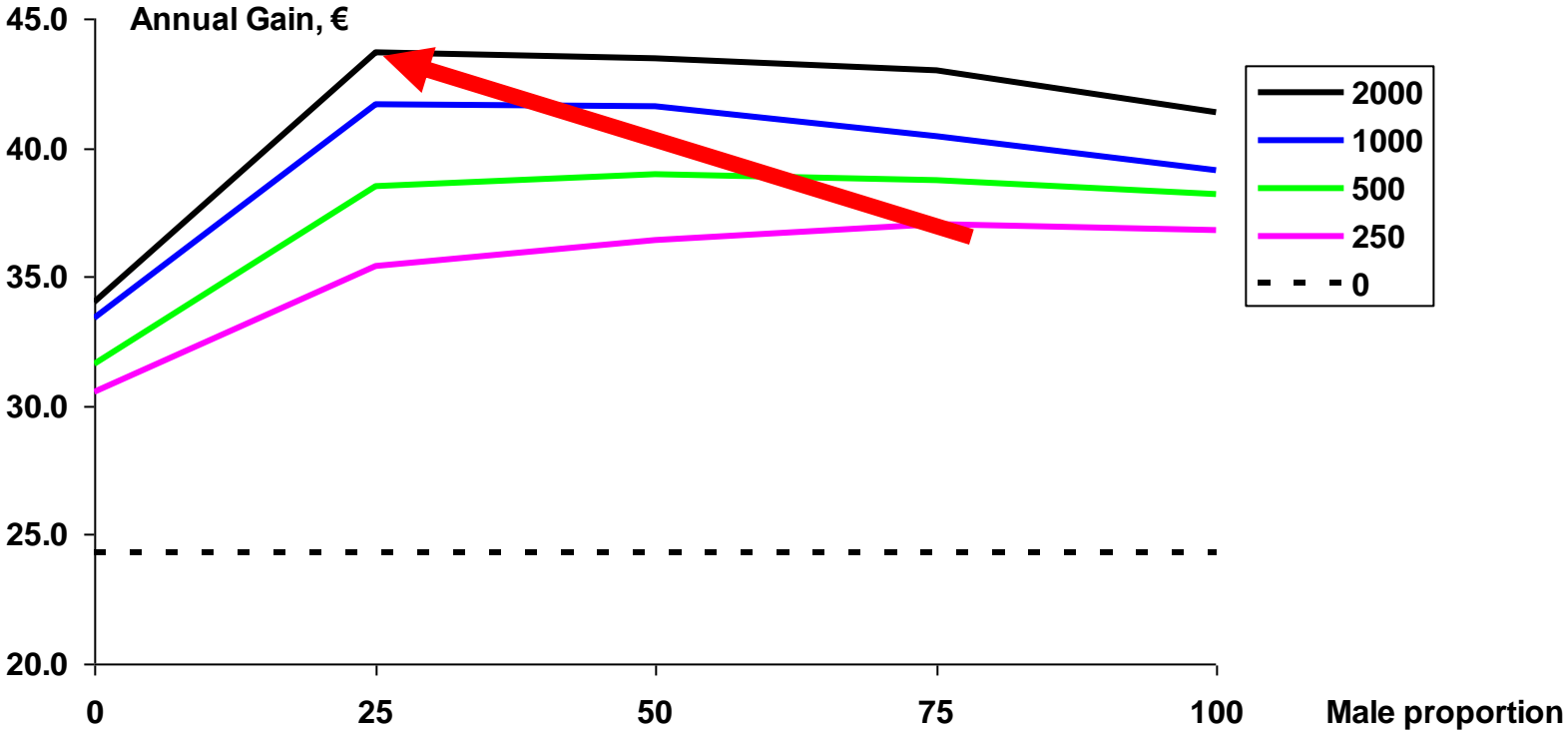
Cows to breed bulls

- **Should we genotype females?**
 - If yes, how many?
- **Should we use MOET?**

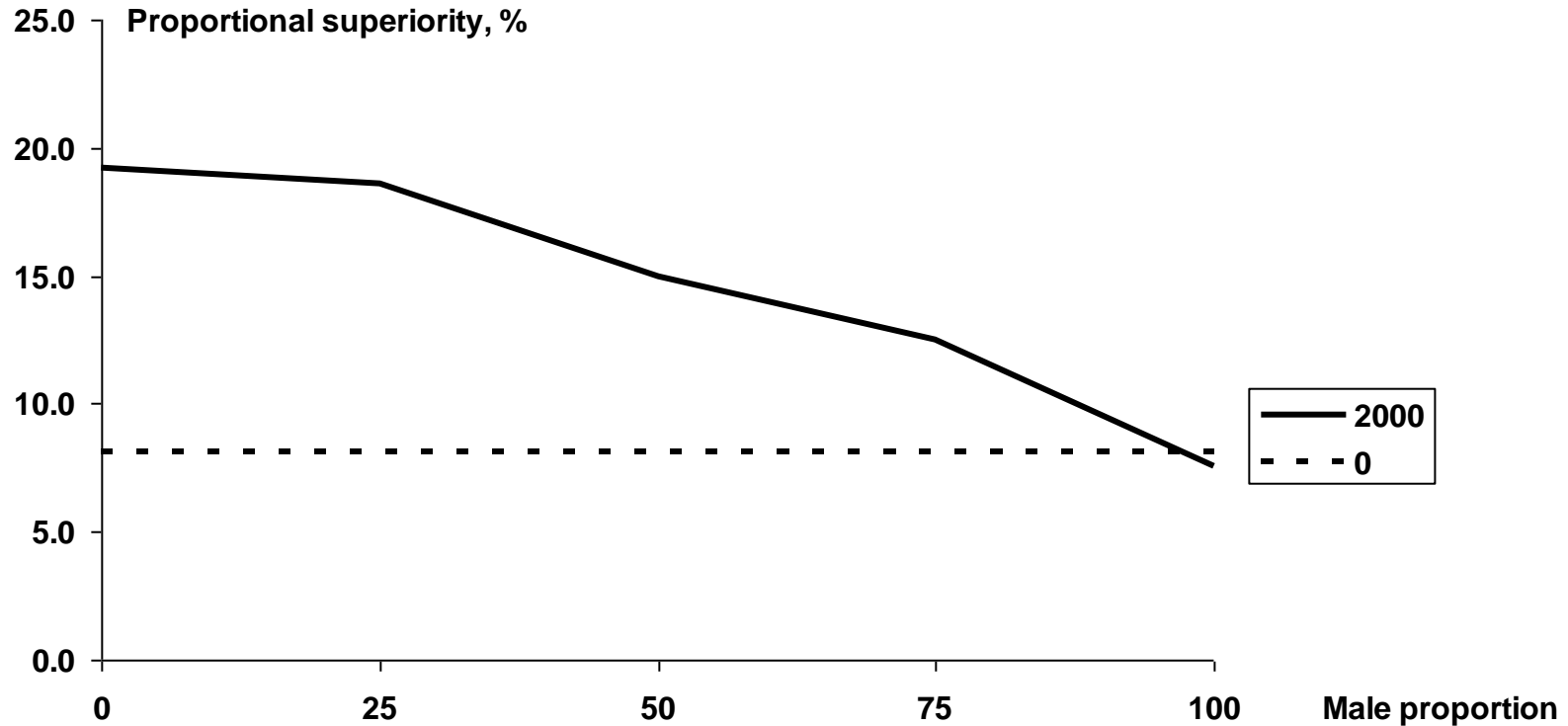
Genetic gain without MOET



Genetic gain with MOET



Proportional superiority of MOET on Genetic gain



Cows to breed bulls

- **With MOET:**
 - Optimum shifts towards more females when more genotypings
- **Without MOET**
 - Optimum is only males genotyped no matter how many genotypings
- **Genotypings of females enhances beneficial effect of MOET on genetic gain**

Recommendations – for the future

- **Use GenVikPlus bulls**
 - To breed cows with very low risk
 - To breed bulls with some risk
- **Genotyping of females will lead to efficient bull dam selection**
- **The investment in genotyping females is best if an effective MOET program is used**