

Genomic Breeding Plans

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How do we use genomic breeding values?

- Now?

- In the future?

What do we do – now?

Waiting bulls?

Bull calves?

Waiting bulls

Probability of culling a Top 20% bull

	Reliability 0.3	Reliability 0.5
30 % culling	6.1%	2.4%
50 % culling	18.5%	10.0%

Culling should be done within age group and family

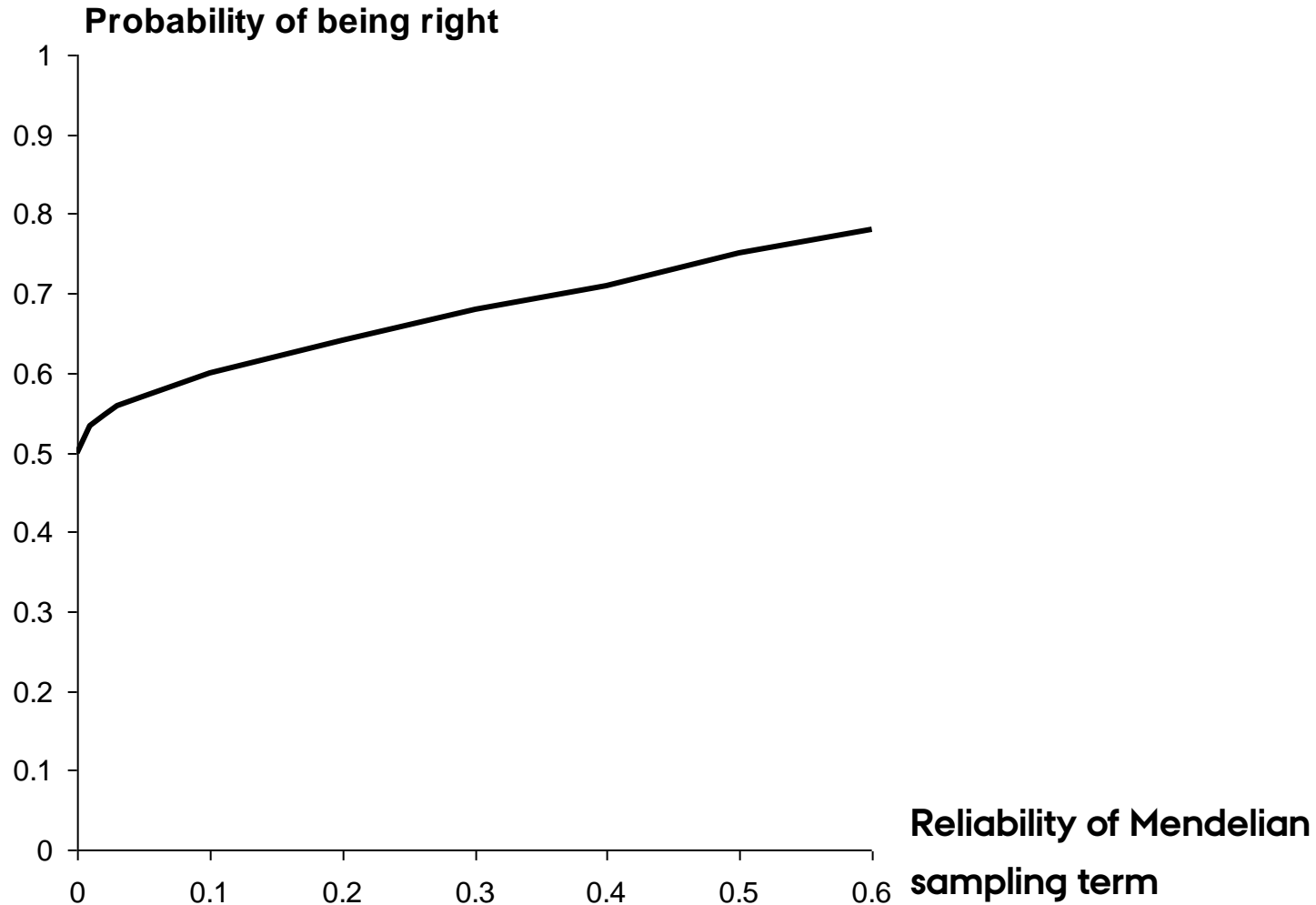
Waiting bulls

Probability of culling a Top 5% bull

	Reliability 0.3	Reliability 0.5
30 % culling	2.4%	0.3%
50 % culling	10.0%	2.6%

Culling should be done within age group and family

The choice among two full sibs



What do we do – in the future?

- **Pre-selection**

- Traditional waiting bull scheme
- Selection of test bulls using genomic information

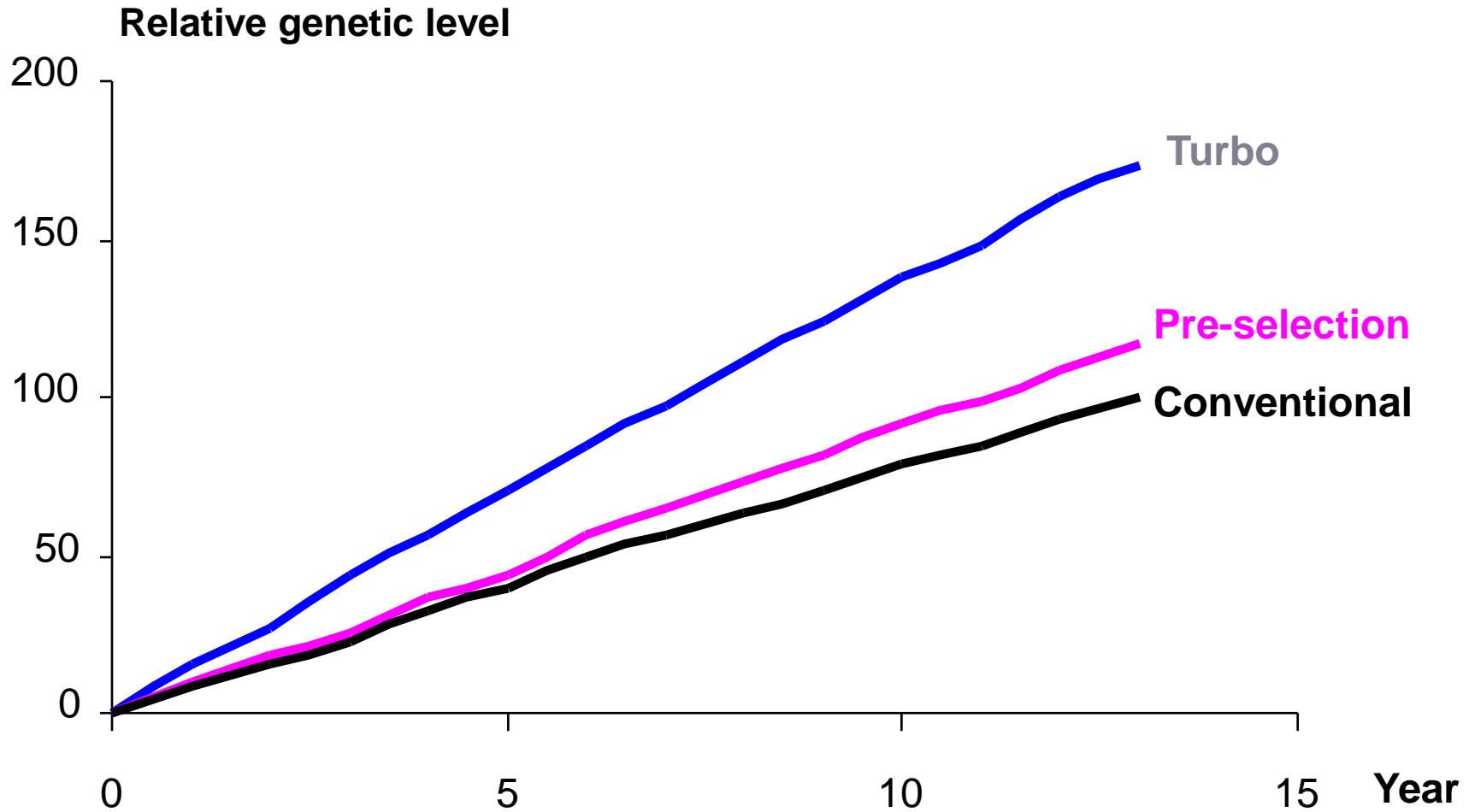
- **Hybrid**

- Both progeny-tested and young bulls as sires of sons and daughters

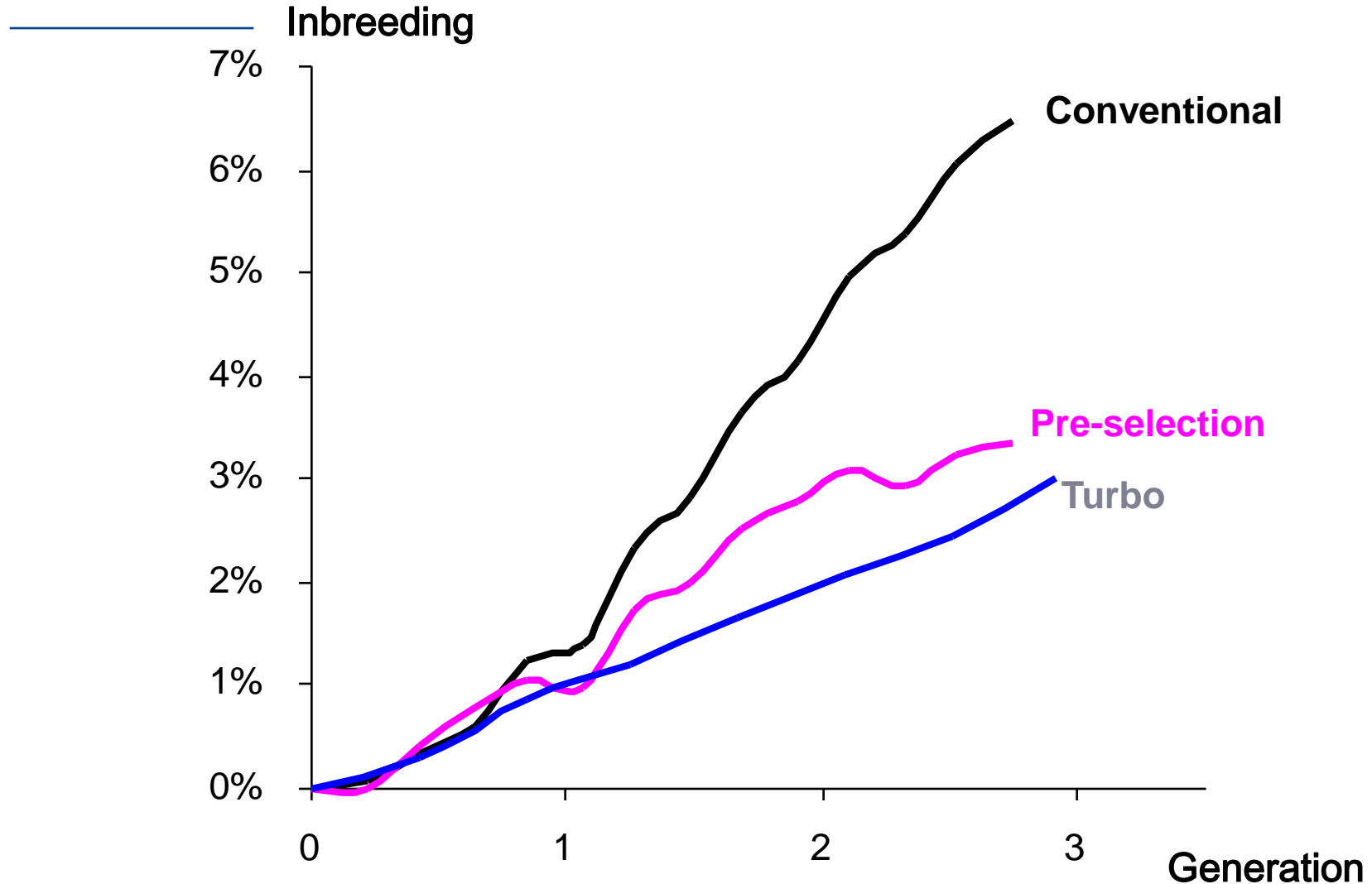
- **Turbo**

- Ignoring age when selecting bull sires

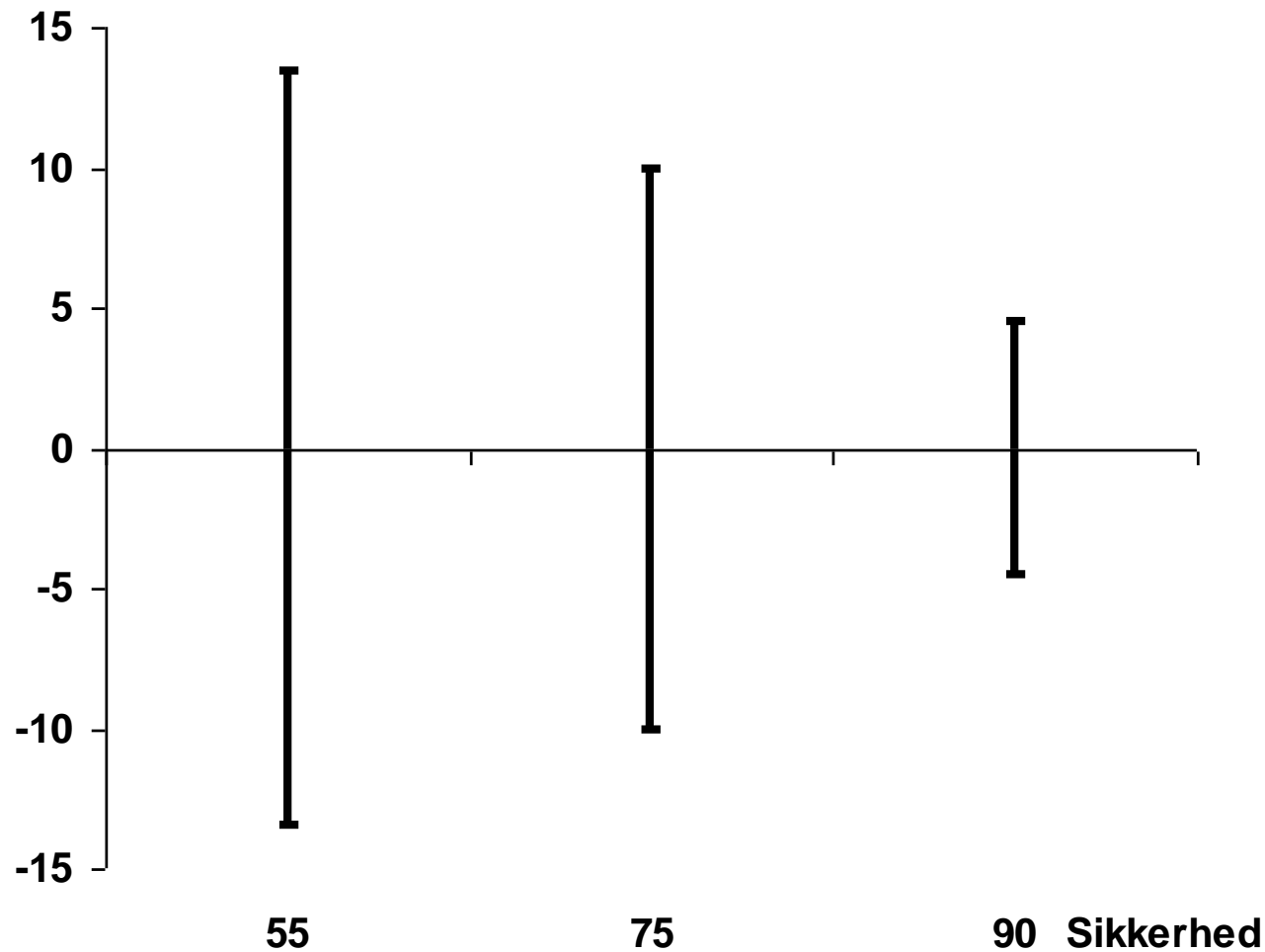
Improvement in gain – $r^2=0.4$



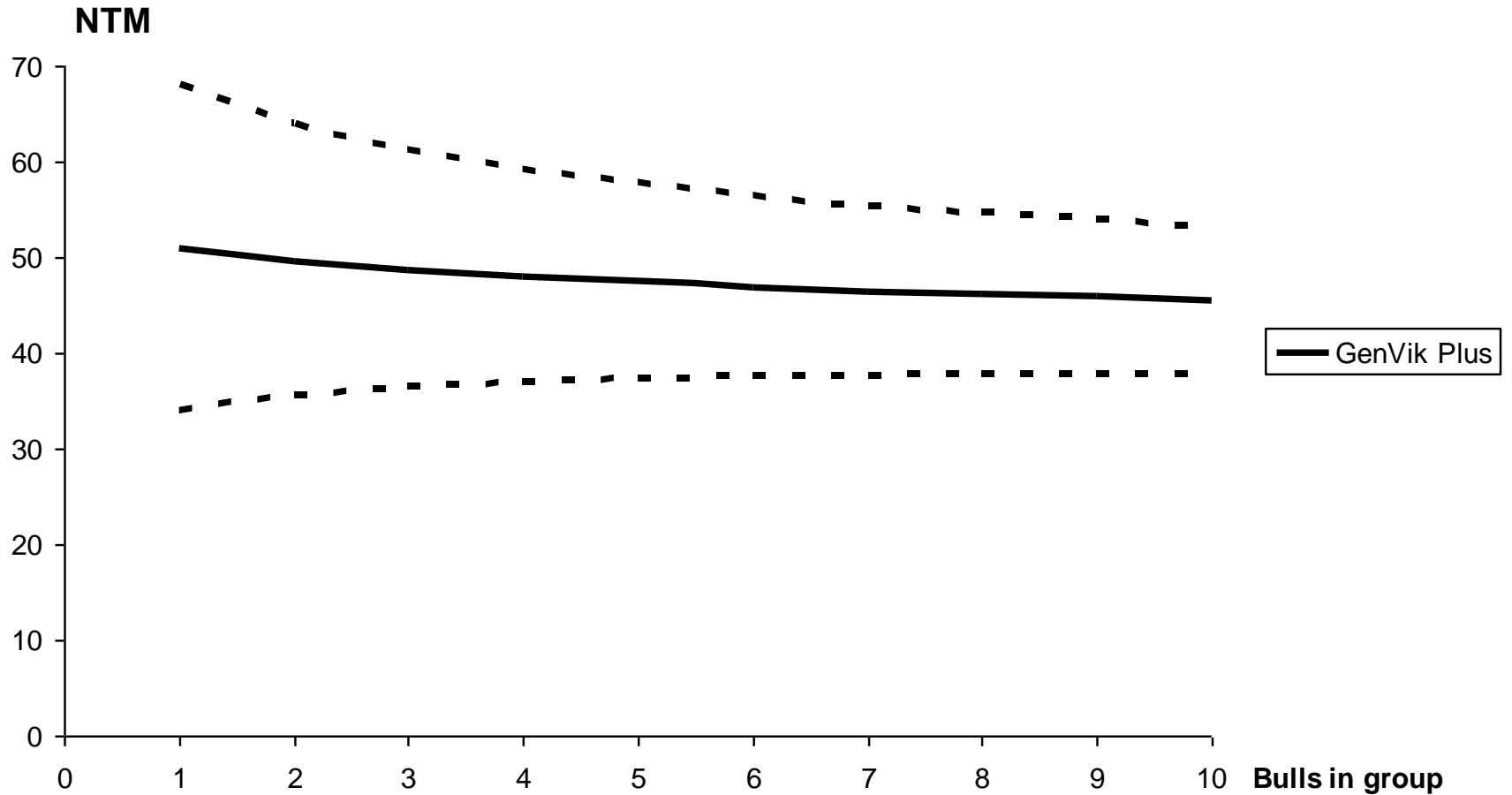
Improvement in inbreeding – $r^2=0.4$



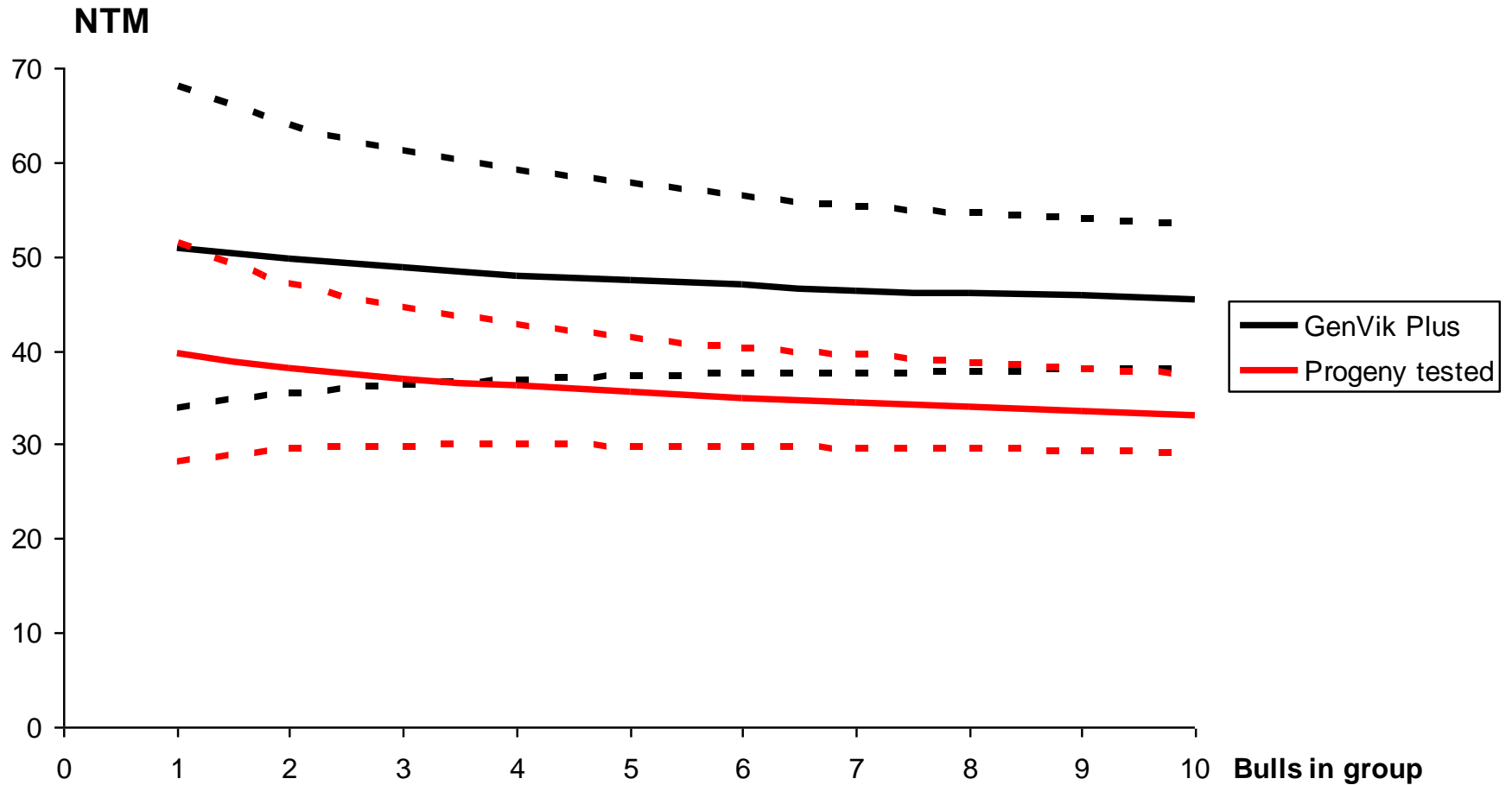
Should we use young bulls intensively?



Uncertainty of groups



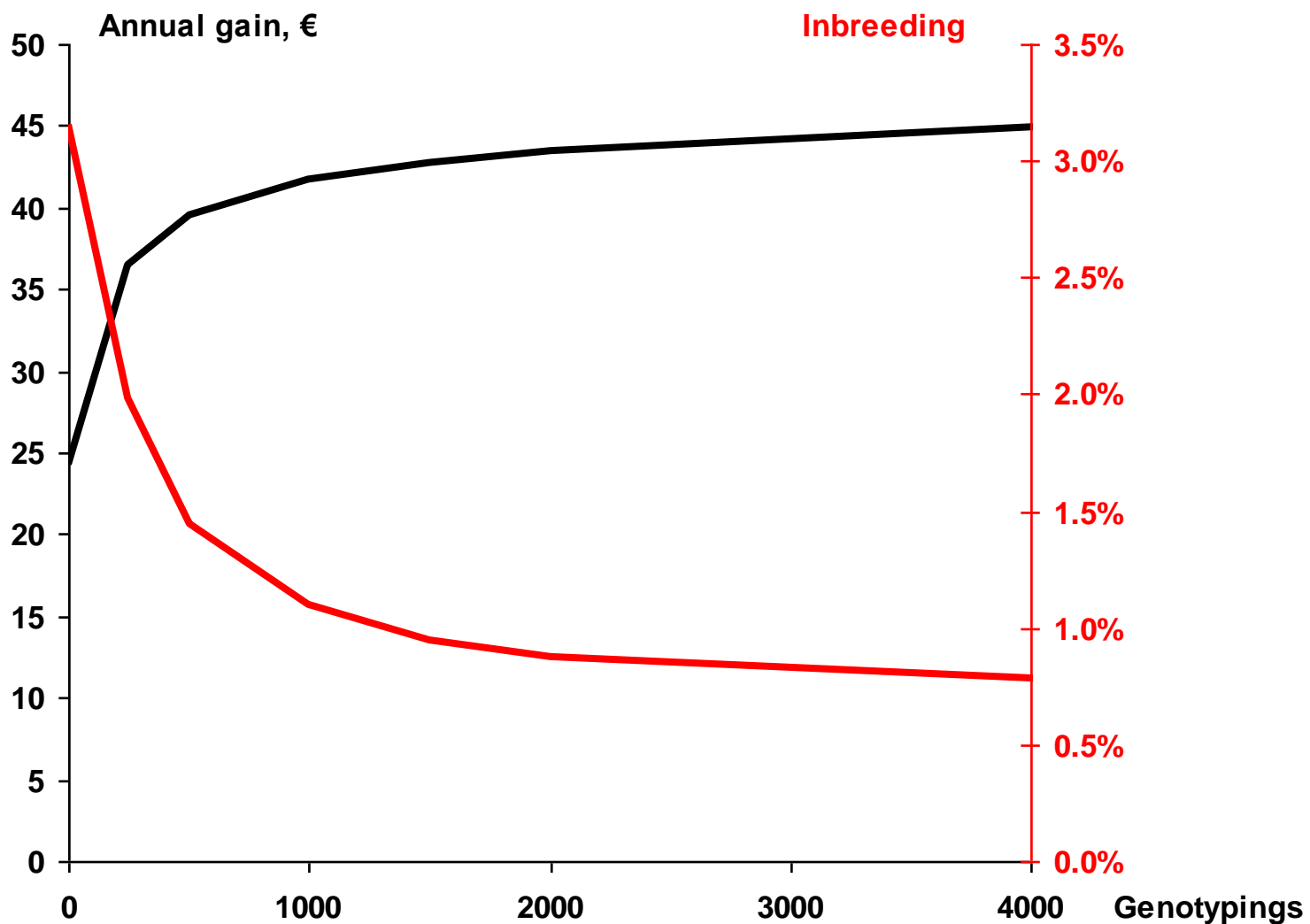
Superiority of young bulls



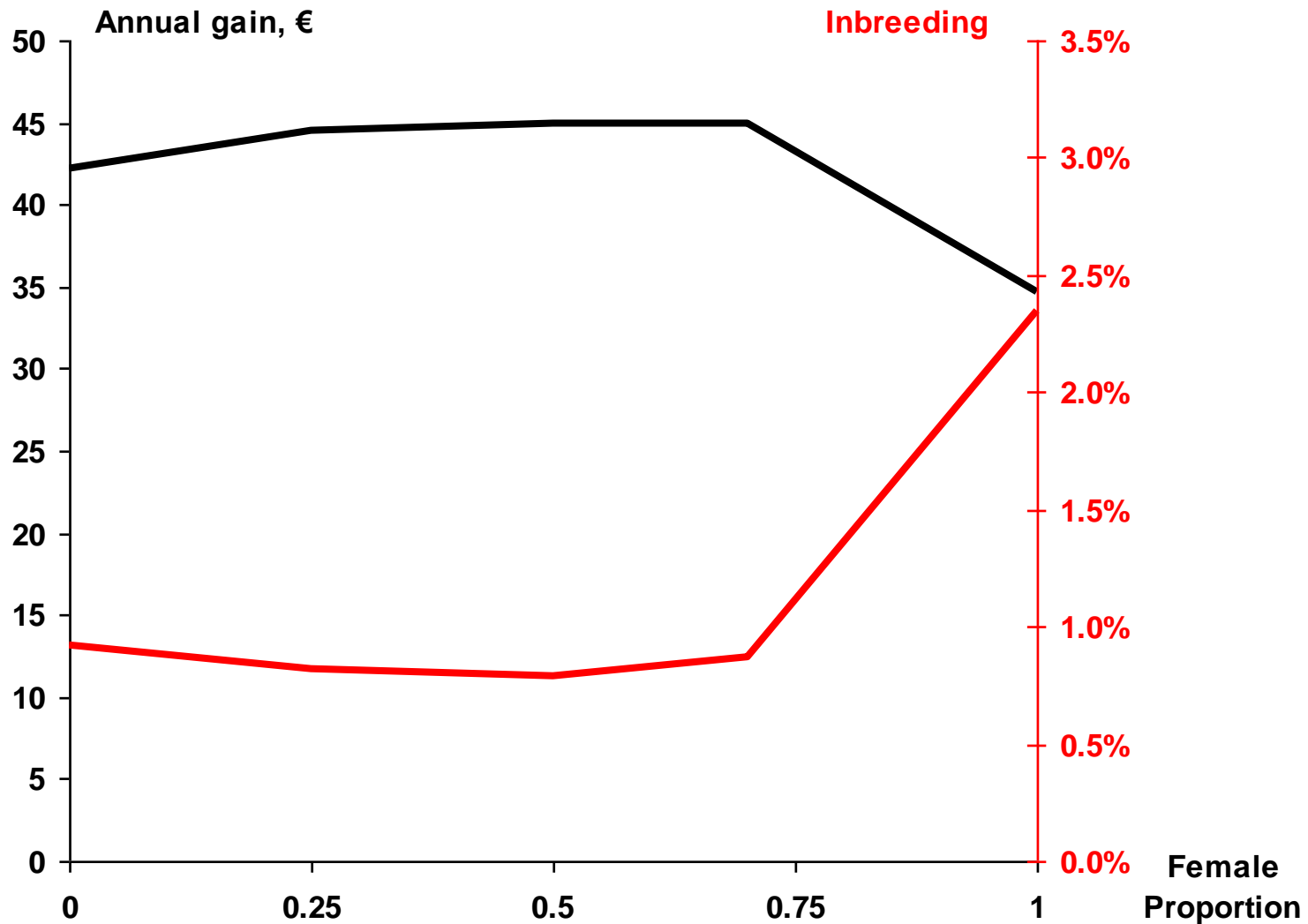
How to use young bulls

- Use them in groups – 'six packs'
- Use several

Genotyping effort – $r^2=0.5$




Genotyping males or females – $r^2=0.5$



Unbalanced use of sires

Relative to 30 bulls used equally



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

Recommendations – for now!

- **Moderate selection among waiting bulls**
 - Within sire-group
 - Within year of birth
 - Up to 30% in Jerseys and Reds
 - Up to 50% in Holsteins
- **Use pre-selection of young bulls if rel. > 0**
 - In all breeds

Recommendations – for the future

- **Maintain number of test bulls**
- **GenVik Plus should be used carefully**
 - **Jerseys and Reds**
 - **<20% of inseminations**
 - **>30 bulls**
 - **Holstein**
 - **<30% of inseminations**
 - **>30 bulls**
- **At least 1000 genotypings per year**
- **Both males and females could be genotyped**
- **Sires of sons should be used equally**