

Use of genomic tests and sexed semen increase genetic level within herd

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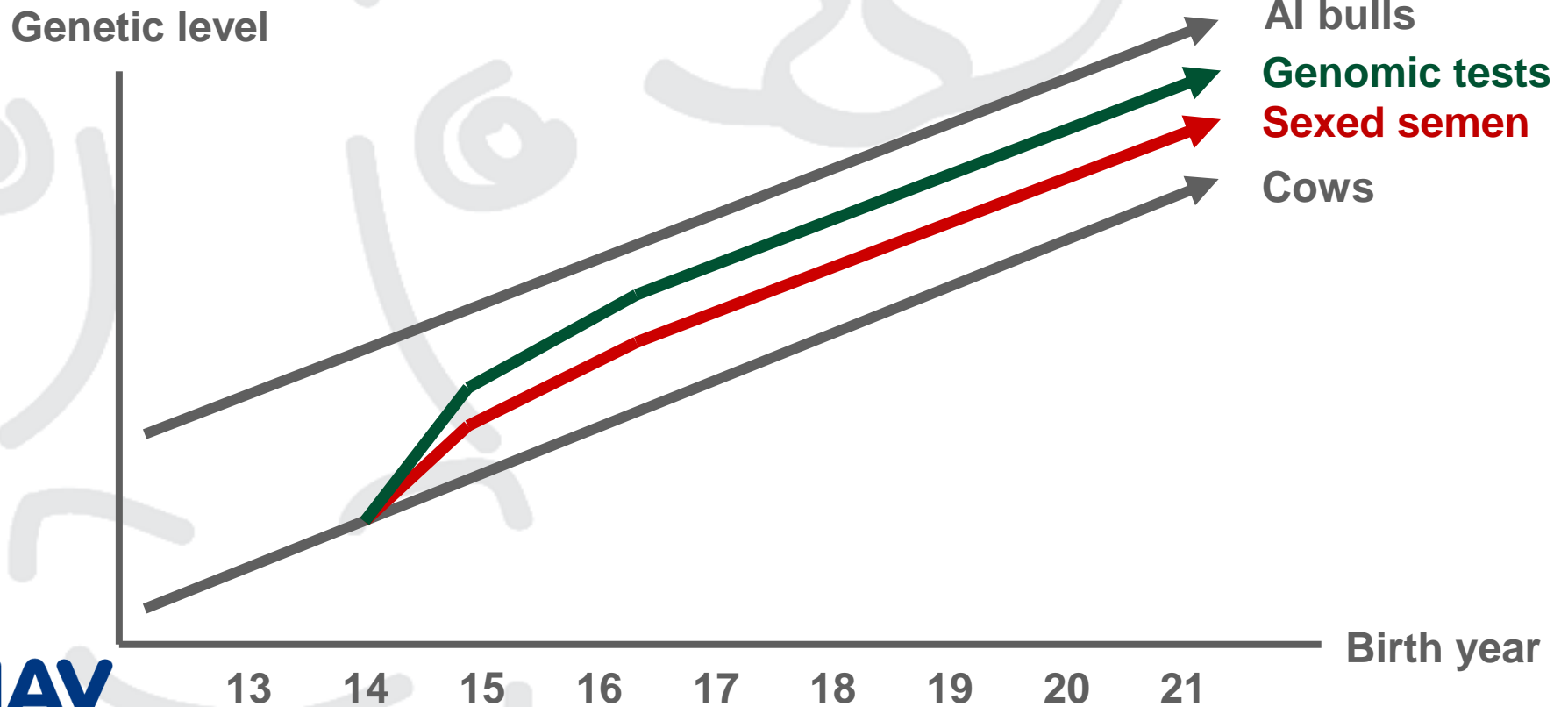
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Se "European Agricultural Fund for Rural Development" (EAFRD)

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Sexed semen and genomic tests reduce genetic lag



Aim and method

- How many NTM units will the genetic level increase if sexed semen and genomic tests are used?
- Simulation study
 - SimHerd
 - ADAM

Percentage of females inseminated with sexed semen

	Sexed semen scenarios				
Heifers, %	0	60	80	60	60
Cows, %	0	0	0	20	40

Percentage of heifers with genomic tests (GT)

		Sexed semen scenarios				
	Heifers, %	0	60	80	60	60
	Cows, %	0	0	0	20	40
Scenarios with GT	None					
	50 % best					
	All					

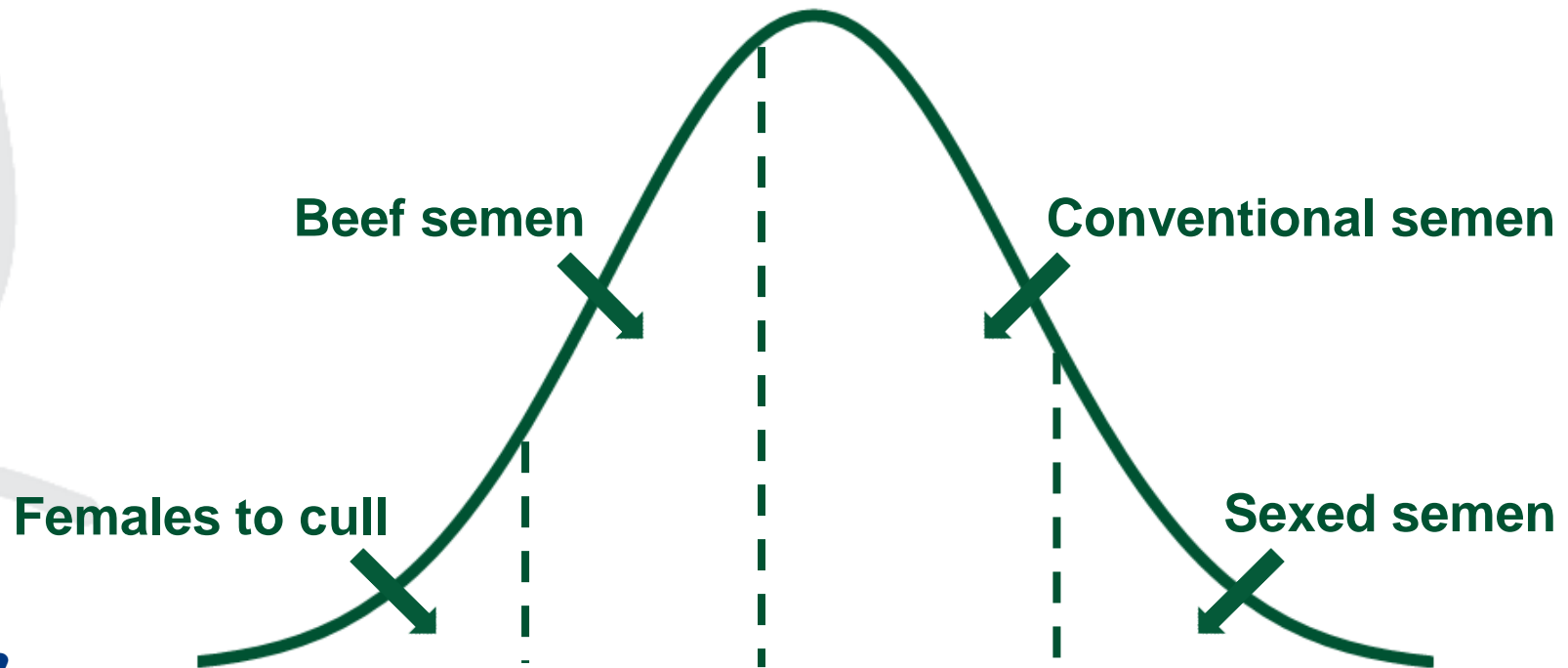
General assumptions

- **No surplus of heifers**
 - **Crossbred calves to beef production**
- **Holstein situation:**
 - **Reliability DGV(NTM): 50 %**
- **Herd size: 210 cows**
- **Danish average management level**
- **Investigated at equilibrium – no discounting**

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Genetic response from selection among females



Reduced genetic lag in NTM units

		Sexed semen scenarios				
	Heifers, %	0	60	80	60	60
	Cows, %	0	0	0	20	40
Scenarios with GT	None	0	1.2	1.2	1.3	1.5
	50 % best					
	All					

Reduced genetic lag in NTM units

		Sexed semen scenarios				
	Heifers, %	0	60	80	60	60
	Cows, %	0	0	0	20	40
Scenarios with GT	None	0	1.2	1.2	1.3	1.5
	50 % best	0.5				
	All	0.9				

Reduced genetic lag in NTM units within sexed semen scenarios

		Sexed semen scenarios				
	Heifers, %	0	60	80	60	60
	Cows, %	0	0	0	20	40
Scenarios with GT	None	0	0	0	0	0
	50 % best	0.5	0.7	0.7	0.7	0.8
	All	0.9	1.1	1.1	1.3	1.3

Break-even prices for a genomic test in €

		Sexed semen scenarios				
Heifers, %		0	60	80	60	60
Cows, %		0	0	0	20	40
Scenarios with GT	None	-	-	-	-	-
	50 % best	22.0	32.0	35.5	33.5	38.5
	All	21.0	27.5	28.0	32.5	32.0

Conclusion

- How many NTM units can the genetic level potentially increase
 - if sexed semen is used: 1.5
 - if genomic tests are used: 0.9
 - if both sexed semen and genomic tests are used: 2.8
- The scenario with the highest genetic level does not correspond to the scenario with the **NAV** highest break-even price for a genomic test

Price assumptions, €

- Purebred bull calf: 81
- Crossbred bull calf: 178
- Crossbred heifer calf: 87
- Springing heifer: 1,340
- Genomic test: 50
- Conventional semen: 24
- Sexed semen: 40
- Beef semen: 25

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