VIDENCENTRET FOR LANDBRUG

Recessive lethals - practical aspects

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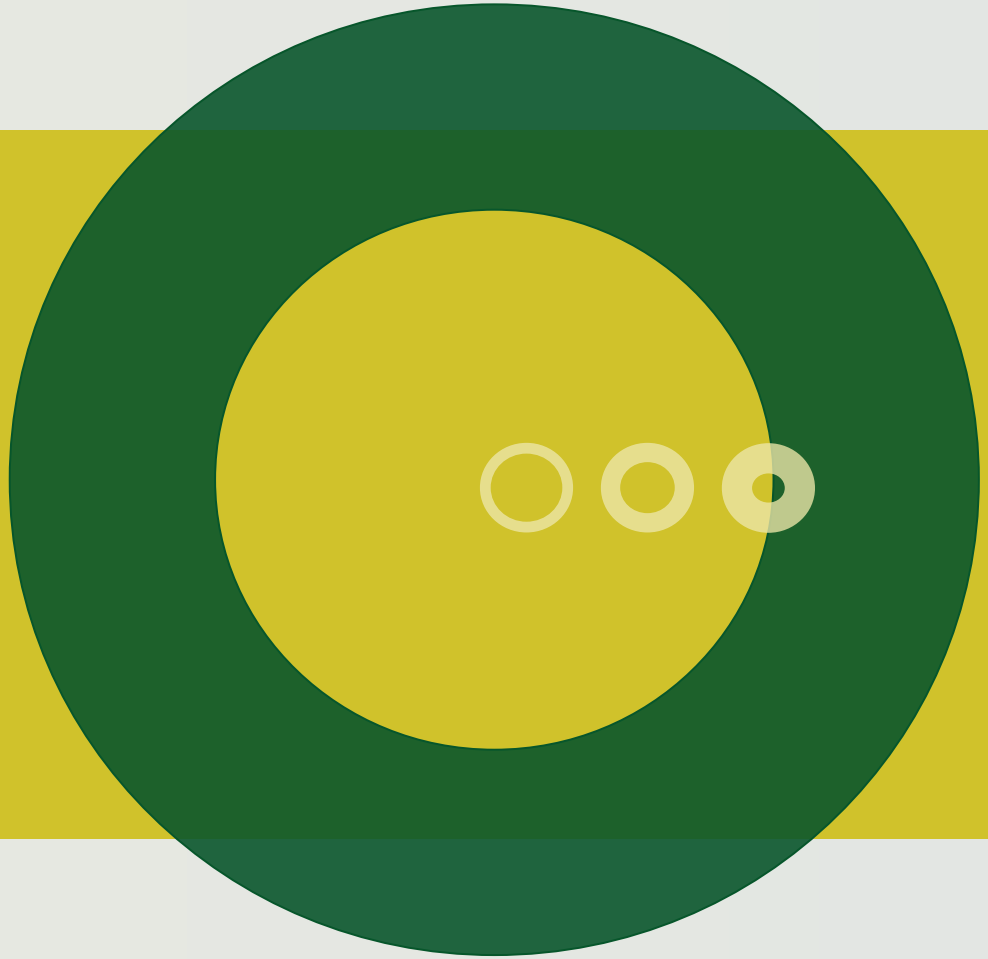

PARTNER I DLBR

Purpose of analyses

Can lethal defects be removed by conventional EBV's?

Can new technology be used to eradicate lethals?

Data

From National Danish Cattle Data base. Founded in 1984

The analyses used information about calvings, inseminations and pedigree

Females in analyses

Cows with a genotyped sire and a genotyped MGS

Probability for being a carrier range from 0.00 to 0.75

Model

Probability being homozygous ($P_{hom-foetus}$) for the recessively lethal allele when the sire is a carrier:

$$P_{hom-foetus} = 0.5 \times 1 \times 0.5 \times P_{carr-dam}$$

$P_{hom-foetus}$ range from 0 to 0.1875

Effect on fertility traits

Model:

$$Y_{ij} = \mu + \beta \times \left(P_{hom-foetus}\right) + Year \times Month_j + e_{ij}$$

Y_{ij}: **NR56**

NR100

NR150

Calving interval

Number of females with a carrier sire

		Haplotype on chromosome				
Birth year	# cows	5	7	8	11	21
1990	23.000	3.000	1.000	3.000	4.000	0
1995	135.000	9.000	20.000	4.000	12.000	13.000
2000	231.000	8.000	52.000	2.000	4.000	68.000
2005	230.000	17.000	80.000	10.000	3.000	7.000
2011	211.000	3.000	39.000	5.000	2.000	12.000
NRR 150			-6.2	-21.5	-17.1	-25.7
Calving int.		22.2		22.7	15.7	43.1

Summay

- Presents of lethals can be diminished by fertility traits in conventional evaluation.
- Selection against the lethal is done in the conventional breeding scheme
- Frequency of detectable harmful haplotypes seems to decrease in HOL
- Few lethal haplotypes are detected
- Young bull calves can be identified by a genomic test and slaughtered – lethals eradicated entirely