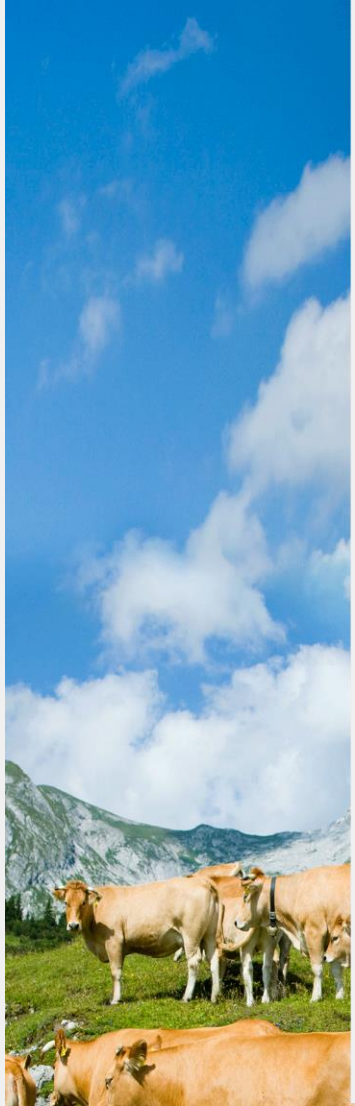

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# Conservation and Sustainable Development of Murboden Cattle in Austria

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- Material & method
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# Murboden Cattle


- Classic multi-purpose breed
  1. Draught power
  2. Beef - mainly from oxen
  3. Milk - less important
- 1900 > 50.000 animals
- 1950 draught power not needed any more
- 1970 crossbreeding with German Frankenvieh started

# Genetic bottleneck

- 1972 Herdbook discontinued, re-established 1978

  ~ 200 supposedly purebred females

- 1982 < 500 breeding animals (incl. crossbreds)

  1st conservation program
  nucleus herd on state farm

- 2nd conservation programme (1995 – 2000)

  collect all breeding animals „phenotypically Murboden“
  collect as much pedigree information as possible

- 3rd conservation programme (2001 – 2006)

  planned mating/use of genebank material compulsory



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# Conservation, Genebank


- 4th conservation program
  - Avoidance of inbreeding, develop products
- Genebanking started in 1997
  - Bull selection by breeding organisation and genebank together
  - Bulls only rented for semen collection
- Use of genebank material (64 bulls total)
  - *18 to 35 AI-bulls/year used in conservation breeding*
  - longtime storage

# Registration, recording

## Herdbook closed in 2000

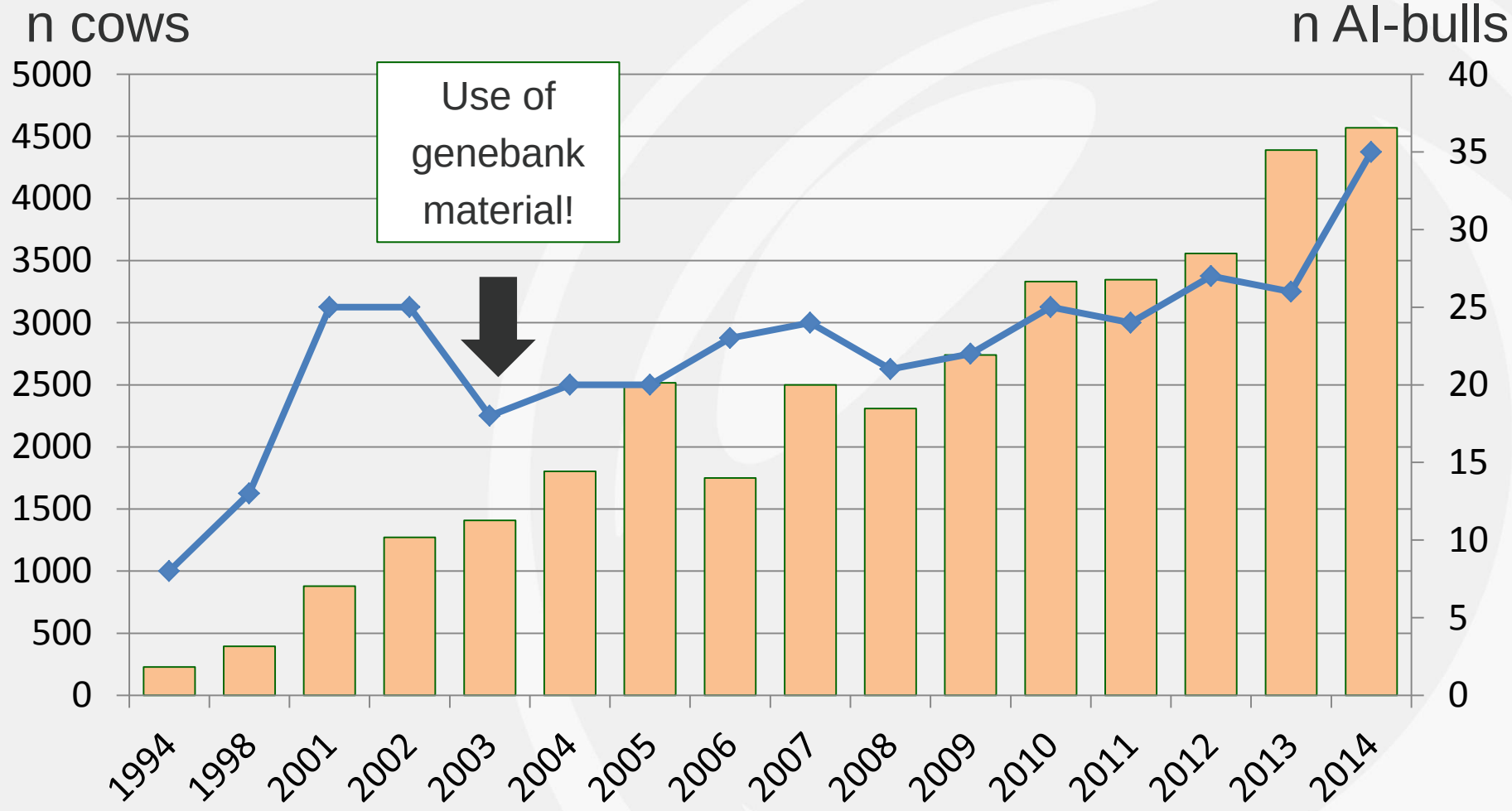
- Phenotypical assessment of all registered breeding animals compulsory!

## Recording part of conservation program

- Beef 4046 cows (2014)
- Milk 285 cows (2014)
- Data set
  - 25.000 calvings (20% first calvings, up to 10 calvings/cow)
  - 16.000 weighing data (200d)
  - 2950 slaughterhouse data sets
  - approx. 500 herds > 450 bulls

Data: Zuchtdata Austria

# Population development
# AI bulls in program




Data: EFABIS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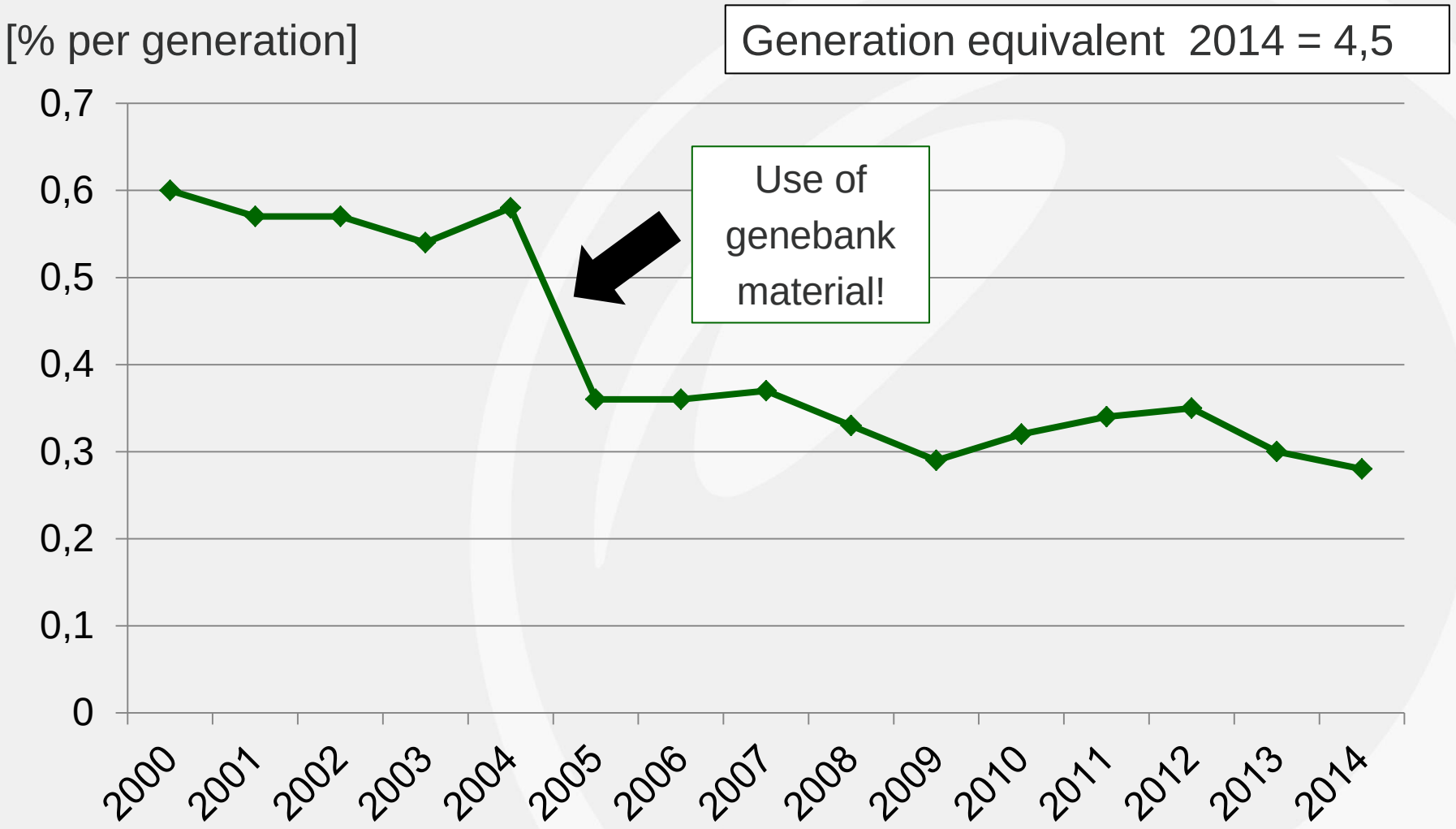
# Inbreeding rate (fd)




Data: RDV

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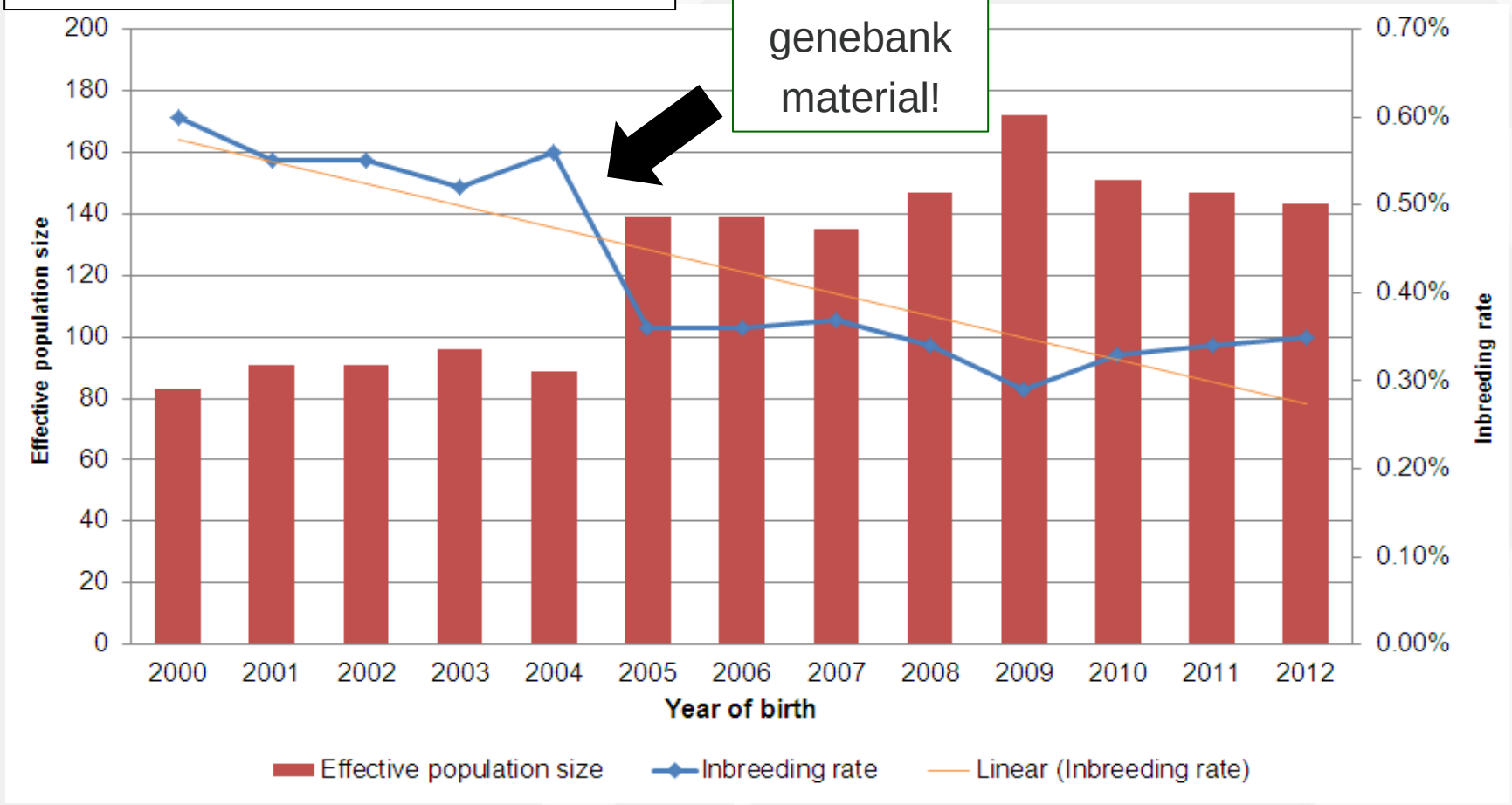
# Inbreeding rate (fd) effective population size

Generation equivalent 2014 = 4,5





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# Breeding program 2015
# Estimation of genetic parameters

## Easy calving

| | direct | maternal |
|---|---|---|
| direct | 0,17 ± 0,04* | |
| maternal | -0,44 ± 0,10* | 0,07 ± 0,02* |

* p < 0,05

## Heritabilities high but not unusual!

- Recommend estimation of breeding value according to normal Austrian model

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# Breeding program 2015

Look for a method applicable in practical breeding!

- Combination of classic breeding value and inbreeding control
- Estimation of breeding values for easy calving, daily gain & carcass traits
- Develop easy to use breeding value index for small populations
- Integrate index into existing structures



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# Marketing scheme

Marketing project since 2006

Murbodner association/marketing organisation/ big Austrian food retailer

- Oxen from pedigree herds
- Premium beef label „Murbodner Qualitätsochse“

Heifer and cow program since 2011 – product development

- Sausage „The Murbodner“ – traditional type but pure beef

2015 products well established on market



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# Conclusion

Population highly endangered after severe genetic bottleneck

- Involve all stakeholders to shape program
- Use of genebank material to control inbreeding rate
- Recording of production traits
- Development of quality products for marketing

⇨ New sustainable breeding program

- Development of weighted index considering productivity and genetic diversity



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# Looking ahead….

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