17.Support Structure

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Study leave

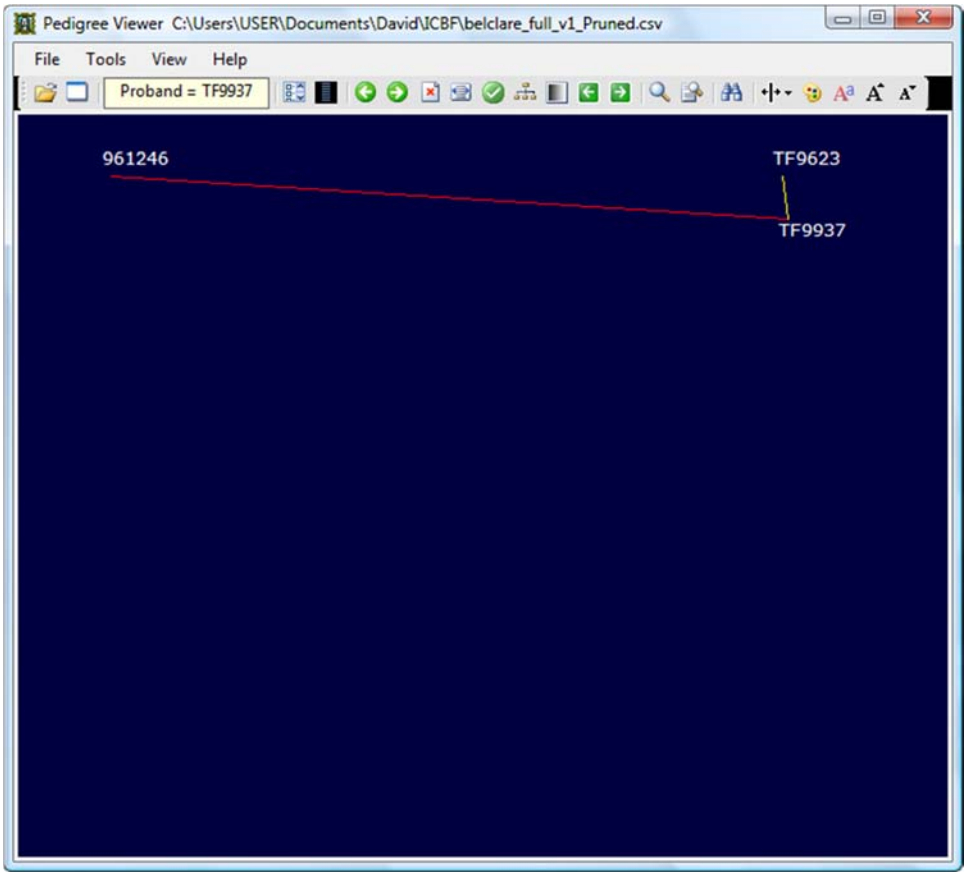
'Pedigree Viewer' program being adapted (Brian Kinghorn).
working with Thierry Pabiou and Pat Donnellan

Being tested on Belclare breed (as 25 years of pedigree records)

Help Flockowner choose 'right' rams and which ewes to mate.

Balance present & future inbreeding levels versus Index values.

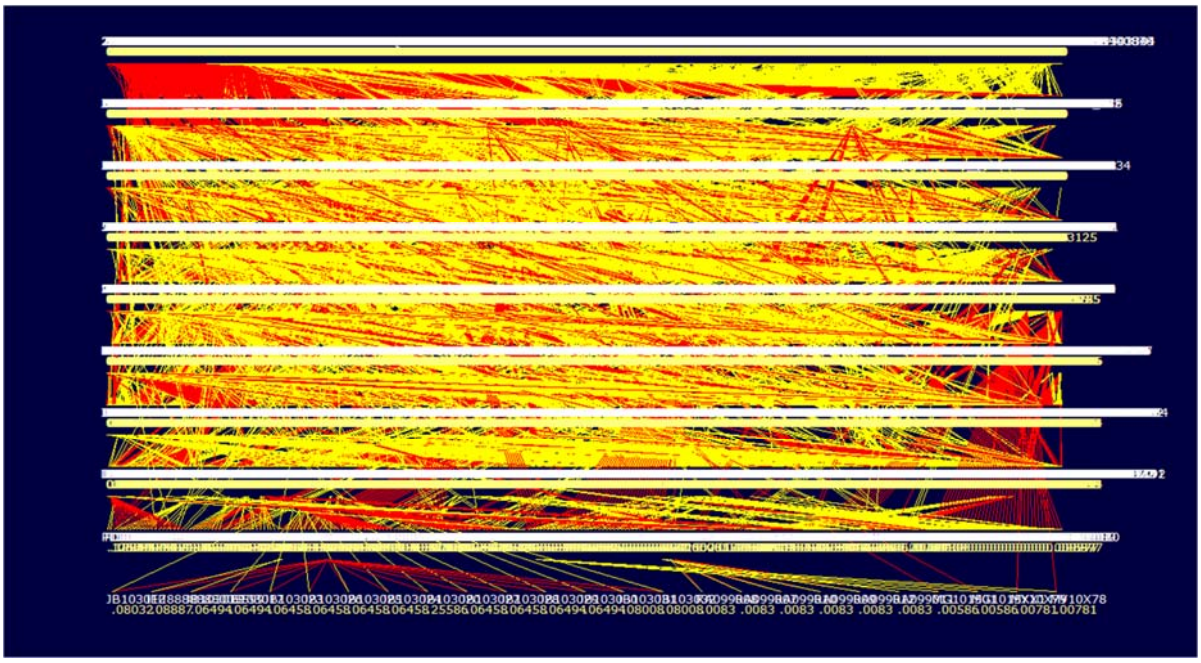
1999



Red
male
link

The Belclare pedigree

~15,400 usable records (1985-2010)



1999-2010

Data

- Number of records in file 15394
- Total number of rams 392
- Total number of ewes 3444
- Maximum sire family size 325
- Maximum ewe family size 22
- Total number of sheep 15394

Methods

•All Belclare pedigree sheep records held by Sheep Ireland were used to calculate inbreeding and optimal mate selection using the software program Pedigree Viewer (Kinghorn 2010).

•The program includes the GroupFix algorithm (Kinghorn pers. comm.) to allow the exclusion of matings between animals from some flocks (closed).

•Sheep records were removed from the dataset when the flock of birth of the animal was unknown or only had <4 records, and when animals had neither parents nor progeny pedigree recorded.

Methods

- All alive sheep born after December 2003 available for mating. All rams for up to 60 matings. Rams with semen were given max. matings value of 1000. The total number of progeny required, 1250, was based on the average number of progeny records from 2006-2010.

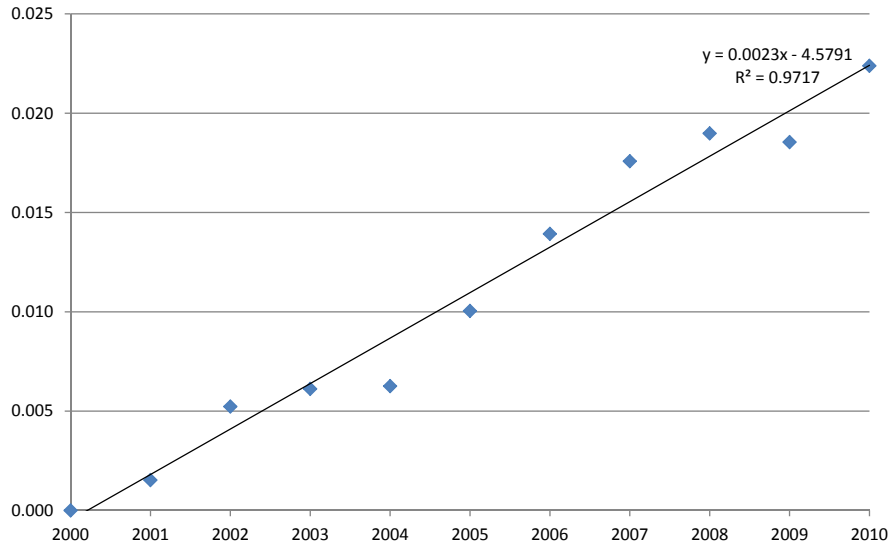
- The inbreeding coefficient was calculated for individuals for each flock or for the total breed by year.

- Inbreeding depression for all traits calculated form animal model.

- Optimal mating strategies, that balanced inbreeding with maximizing average selection index value for the breed, will be calculated assuming that :

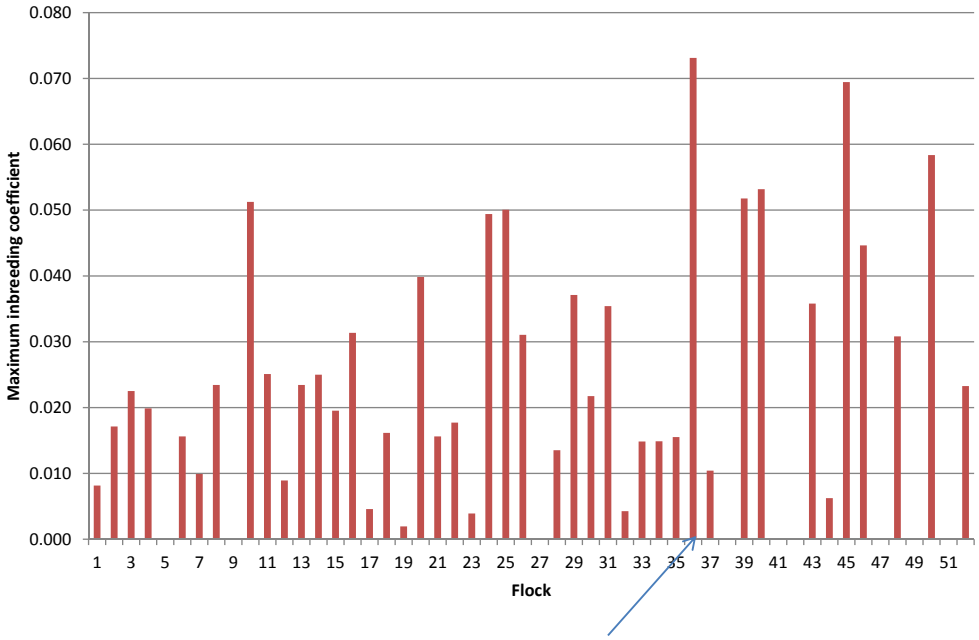
1) all flocks are open,
2) all flocks are closed,
3) flocks only use rams and ewes from flocks they have used before

Inbreeding level (all flocks)



Increasing ~1% per generation - warning light

Individual flocks – current/max. average



…to date

- The current level of inbreeding (0.022) and the rate of increase in inbreeding (0.23% per annum or about 1% per generation) in the Belclare breed are around the levels suggested by FAO to be of concern.
- Similar to levels in other breeds (Danish populations of Texel (1.1% per gen), Shropshire (1.1% per gen) and Oxford Down (1.0% per gen).
- There are 16 out of 59 flocks that have or have had average inbreeding coefficients over 0.03.
- This level of inbreeding needs to be effectively countered by a tactical mate selection program.
- The most effective program is expected to be opening up flocks to genetic material from a wider range of flocks and careful selection of rams and matings based on pedigree and Index EBV.

Discussion

- What group scenarios are of interest?
- What reports are of interest?
- Should Lambplus provide ram selection and ewe allocation to rams as a web service?
- Would other breeds be interested?

Thanks

- Belclare and Galway breeds
- Sheep Ireland and ICBF staff