IRISH CATTLE BREEDING FEDERATION

Estimation of genetic parameters for Irish test day milk production evaluation

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Session 4: *National and International Evaluations*

National Development Plan
Transforming Ireland

Background

- Current milk production model is 305d model
- Parameters estimated in 1999
  - Change in herd profile
  - Change in recording methods/frequency
- Desire to move to new software and run in-house
- Project to develop test day model
  - First step parameter estimation

Background

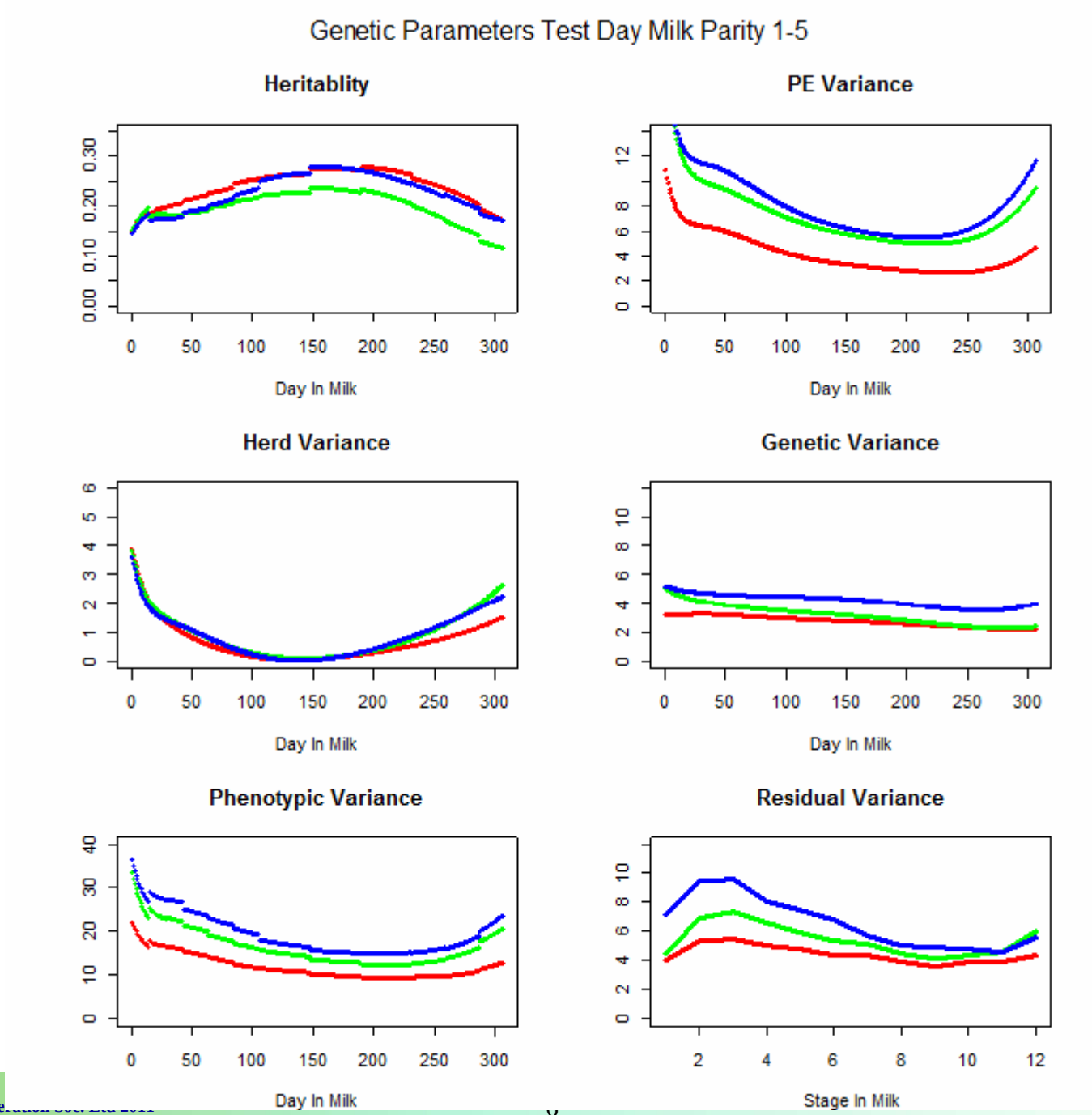
- Ireland has primarily pasture-based dairy production system
  - Calving coincides with grass availability
- Seasonality is likely to become stronger
- Price fluctuation
- Removal of Quota post 2015 – increasing herd size
- Economic weight of -11.89 Euro / day calving interval

Objective

To estimate variance components of milk production based on Irish data, with a view to developing a Random Regression Test Day model and investigate the inclusion of seasonality

Data/Model

- Holstein / Friesian animals,Parity 1-5
- Traits Test Day Milk/Fat/Protein/SCC
- MiX99
- Animal Model
- No across trait correlations
  - Parity 1 Parity 2 Parity 3/4/5
- Heterogeneous residual (12 blocks/parity)
- 4 random regressions
- 1 fixed regression
- 3 fixed class effects,



Correlation between current 305d and new RR TD EBV's

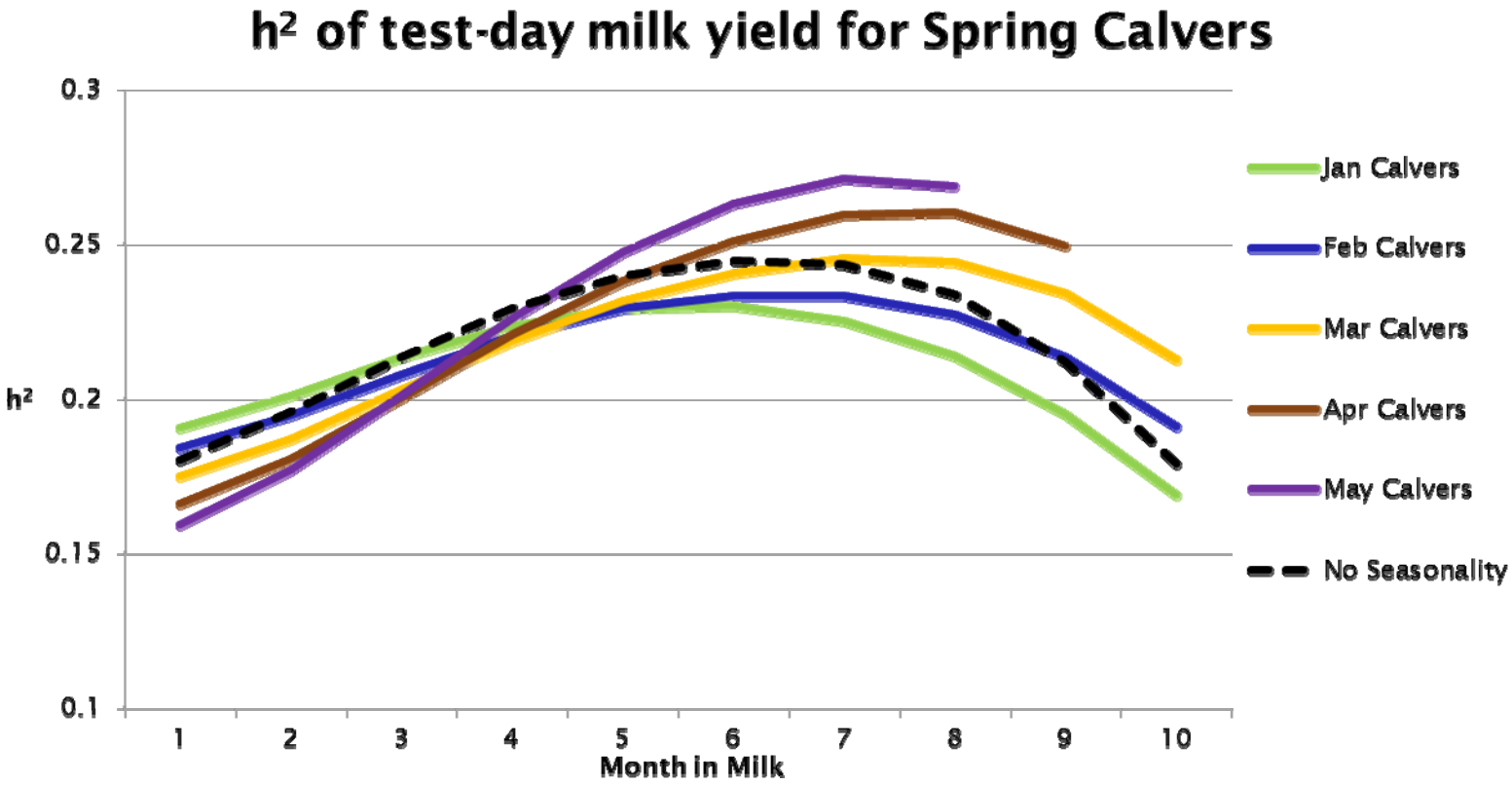
- Using current 305d EBVs and newly estimated RR TD (including general het. & rec.) EBVs

EBV correlations between current 305d model and new RR TD model for complete lactation		
	AI Sires	Cows
Milk Yield	0.93	0.83
Fat Yield	0.90	0.88
Protein Yield	0.78	0.74
SCC	0.86	0.89

Seasonality

- Are there benefits to using certain bulls at specific times in breeding season
- Examine variance components of milk production as effected by both stage of lactation and month of production
- Instead of Days in Milk (DIM)
  - Months in Milk(MIM) – Stage of lactation
  - Test Months(TM) – Month of Year

Results : heritability



Split genetic variances across MIM & TM
1. MIM

TD Milk

Genetic variance for MIM *(diag.)* & genetic correlations between MIM *(off diag.)*

	Early lactation (MIM=2)	Mid lactation (MIM=5)	Late lactation (MIM=8)
Early lactation (MIM=2)	2.28	0.88	0.73
Mid lactation (MIM=5)		2.25	0.95
Late lactation (MIM=8)			1.79

Split genetic variances across MIM & TM
2. TM

TD Milk

Genetic variance for TM *(diag.)* & genetic correlations between TM *(off diag.)*

	April Milk test (TM=4)	June Milk test (TM=6)	Sept Milk test (TM=9)
April Milk test (TM=4)	0.01	0.46	-0.71
June Milk test (TM=6)		0.02	0.30
Sept Milk test (TM=9)			0.02

Results: Genetic Correlations of 305 day milk yield

- Compare predicted 305 milk yield from this model with “standard” test day model
- For AI bulls with >20 progeny
  - Correlations milk yield > 0.996
  - Correlations persistency >0.930
- LogL suggest “standard” model preferable

Next Steps

- Interbull test run Sep 2012
- Fixed effects across breed
- Specific Heterosis/Recombination
- Heterogeneous variance
- Persistency
- Practical considerations
  - Weighing across parity
  - Presentation

Thank you

got milk ....?