Divergent selection for length of productive life in rabbit

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Context

- Length of productive life in rabbit breeding
  - High replacement rate
  - Cost of replacement
  - Low reproduction performances of young females

- Selection on length of productive life
  - A matter for numerous species
  - Selection on genetic merit (e.g. survival analysis)
  - But no experimental demonstration

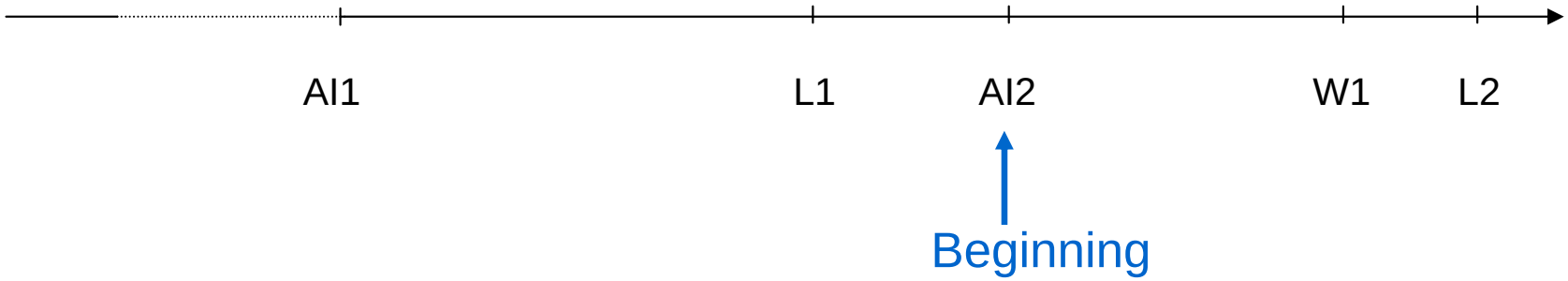
Objective

- Experiment the feasability of a selection
  - on length of productive life
  - with estimated breeding values
  - using a survival analysis model
- Evaluate the correlated responses on
  - reproductive performances
  - energy balance

Experimental set up

- Divergent selection
  - L+: high longevity
  - L-: low longevity
- Two experimental farms
  - Farm1: low sanitary control
  - Farm2: high sanitary standard
- Genetic merit estimated
  - from offspring number of AI
  - with the ‘Survival Kit’
  - using previously estimated genetic parameters

Selection criterion

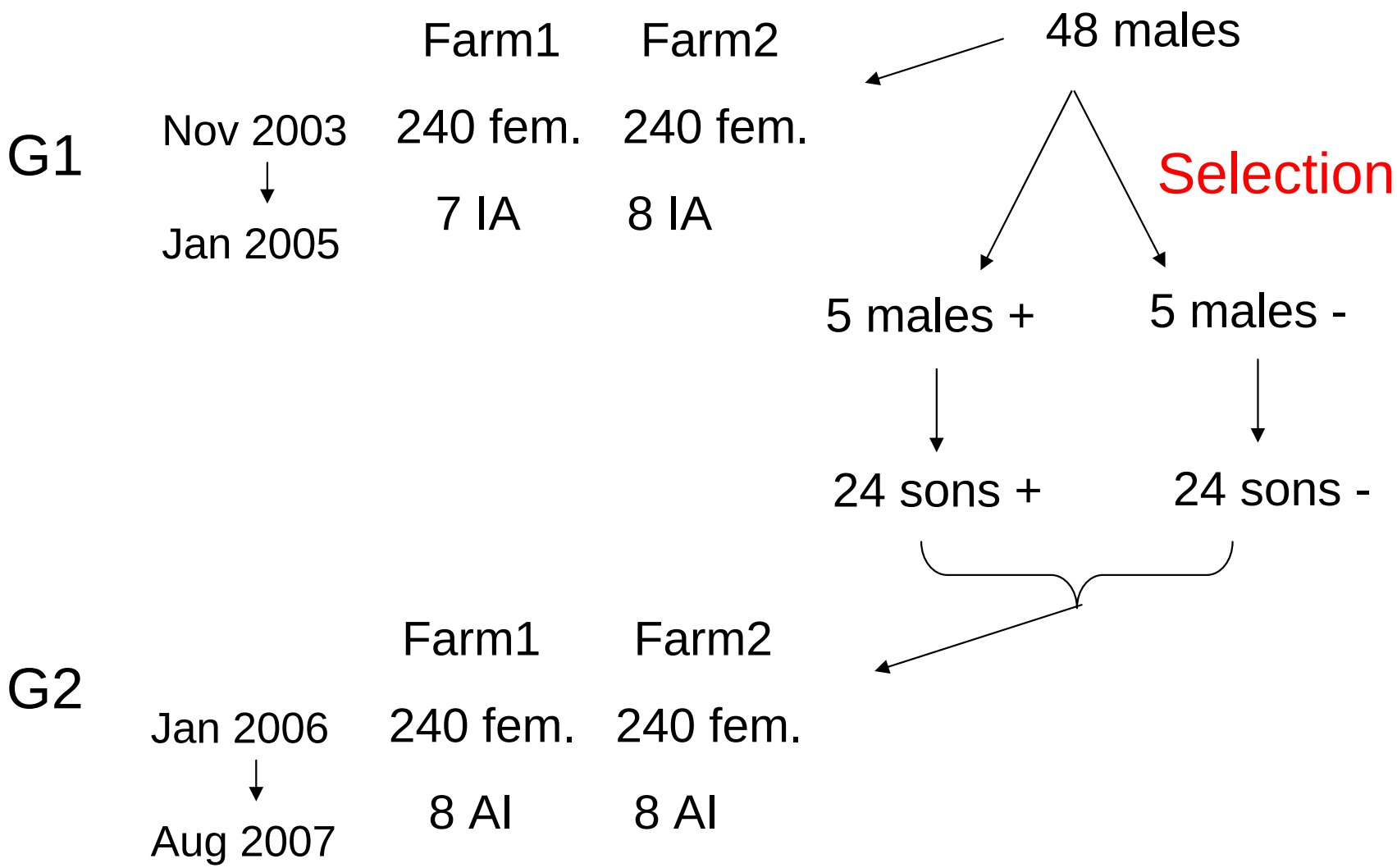


- Batch management
- AI every 42 days
- Length of productive life = total number of AI
- Does still in production after 8 AI were censored

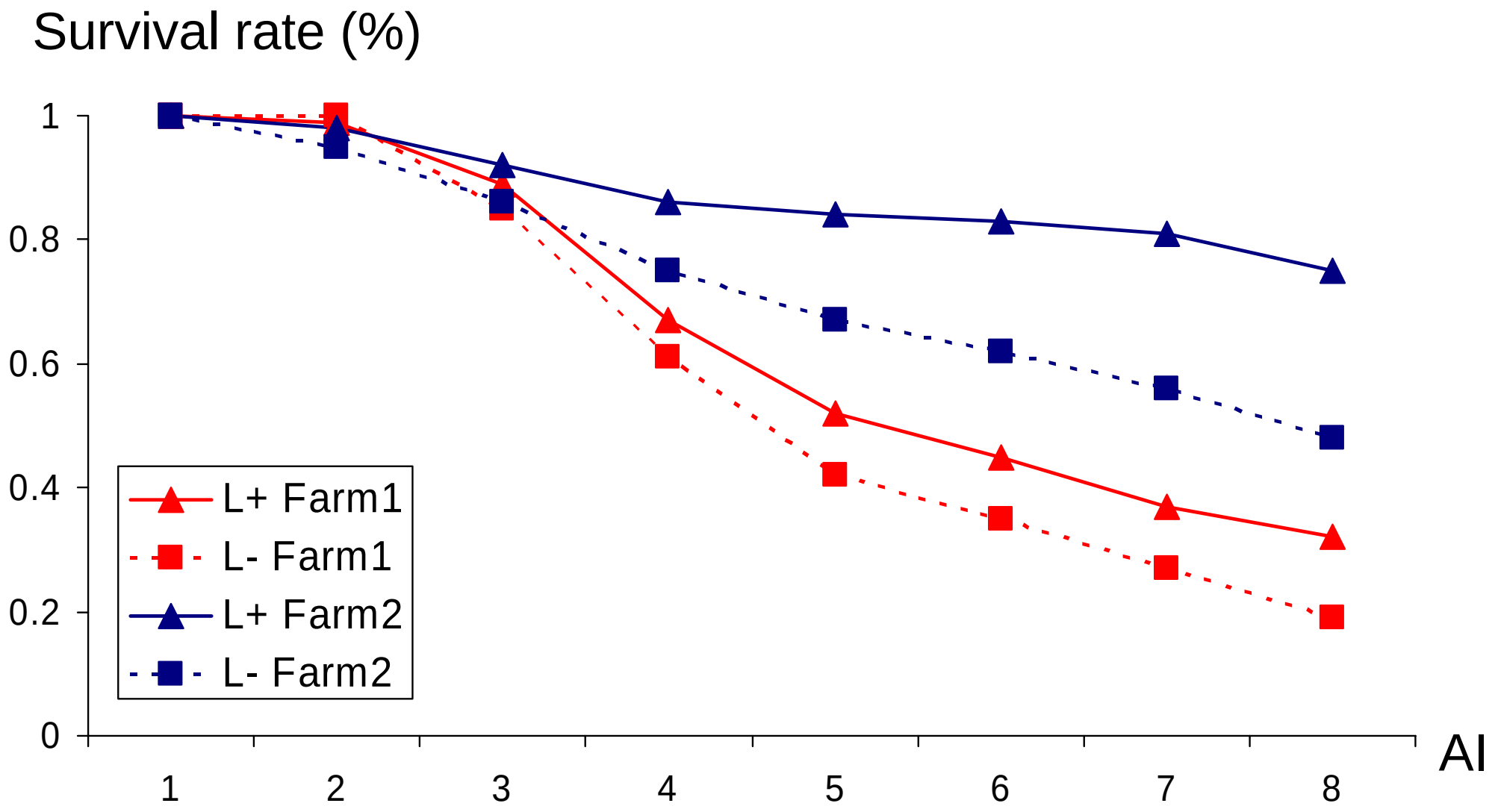
Survival analysis

- Discrete data
- Fixed effects:
  - Time dependant effects:
    - Farm-year-season, parity-physiological status, litter size
  - Time independant effects:
    - age at first fertile AI
- Random effects:
  - Animal

Selection scheme



Results G2

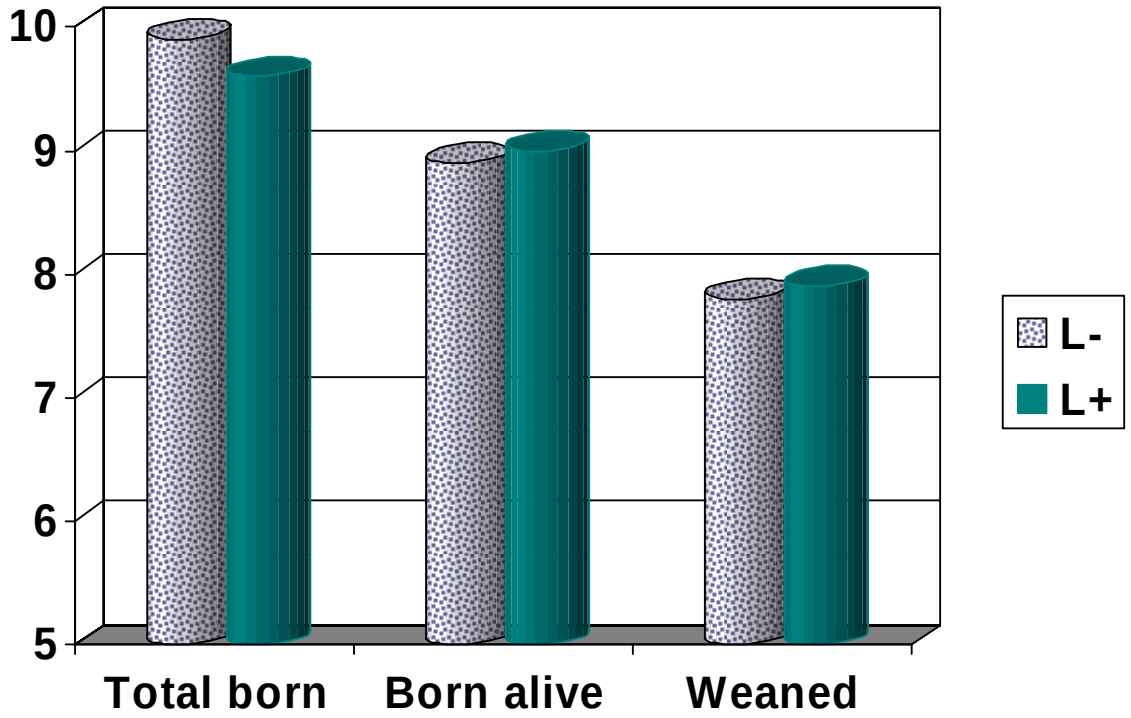

Survival rate (%)
1
0.8
0.6
0.4
0.2
0
L+ Farm1
L- Farm1
L+ Farm2
L- Farm2
1
2
3
4
5
6
7
8
AI

Culling reasons

	L-		L+	
	Farm1	Farm2	Farm1	Farm2
Mortality (%)	56	24	54	9
Culled females (%) ill condition	26 10	14 3	14 4	6 2

Reproductive performances

- No effect of selection
  - On fertility
  - On litter size



Conclusion

- Selection seems efficient
- No unfavourable response on reproductive performances
- Unanswered question: symmetry of the response
- In progress: balance energy analyses

Acknowledgements

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