



Lifetime production: an index to show what cows really can produce

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Demand from the market

Develop a lifetime production index for bulls combining production and herd life

Requirement:

- Shows genetic potential lifetime production of daughters
- Use existing breeding values

Lifetime production index – approach (1)

follow daughter groups during whole life

- Production of each lactation
 - Level: EBV production per day, per lactation (testday model)
 - Rate of maturity
 - Curve: EBV production per day (testday model)
 - Length lactation: EBV calving interval
 - High EBV -> shorter lactations
 - Chance to produce milk at a certain day: EBV longevity

Lifetime production index – approach (2)

Base:

- Fixed dry period : 60 days
- Follow bull during on average 11 lactations
= > all daughters culled

Traits

- Kg milk
- Kg fat
- Kg protein



Example 1: Sunny Boy

Breeding values:

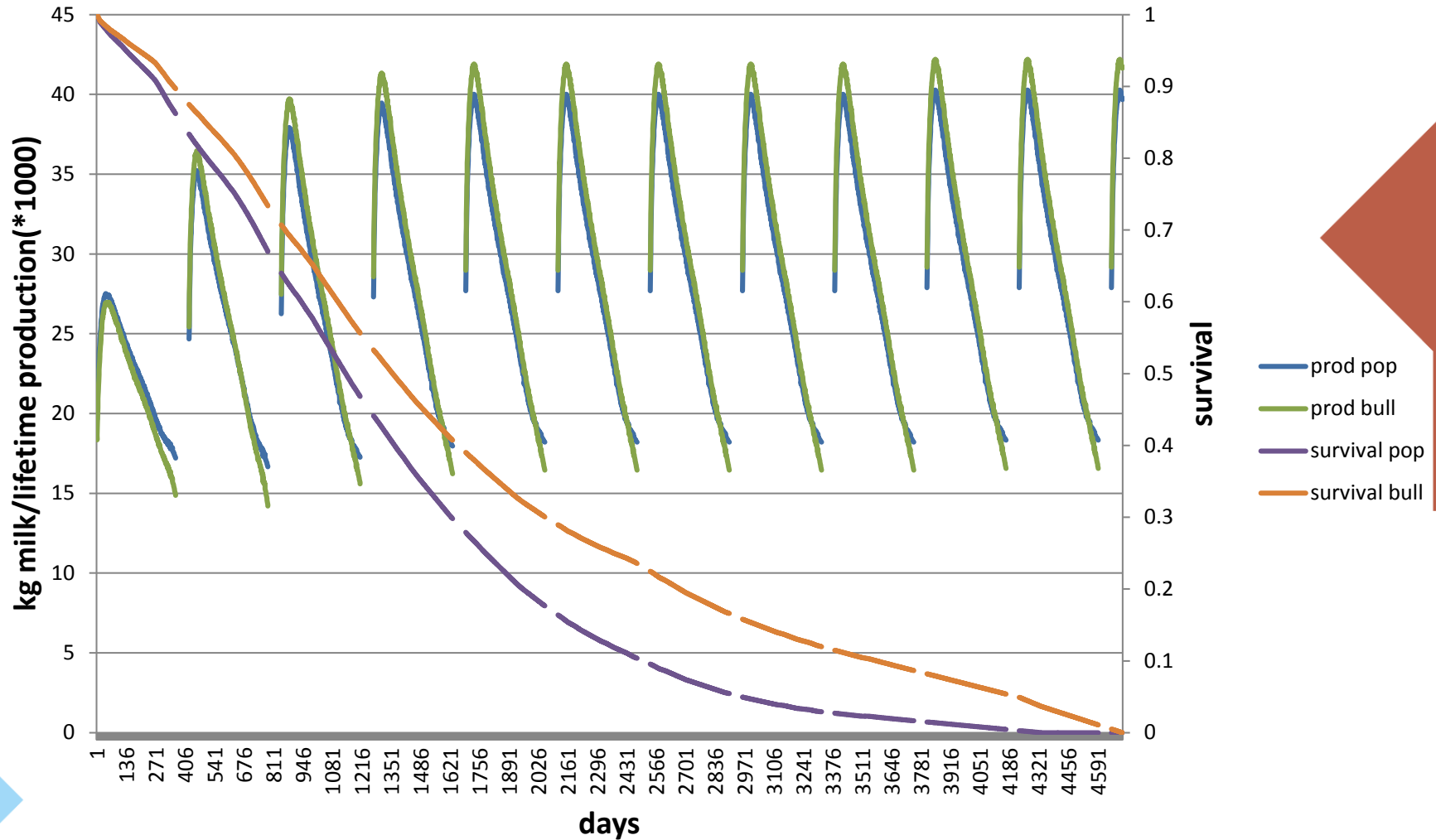
Milk	+54 kg
Longevity	+373 days
Persistency*	99
Rate of maturity*	108 -> relative more production in later lactations
Calving Interval*	99



*Relative breeding value:
Mean = 100
Stdev = 4

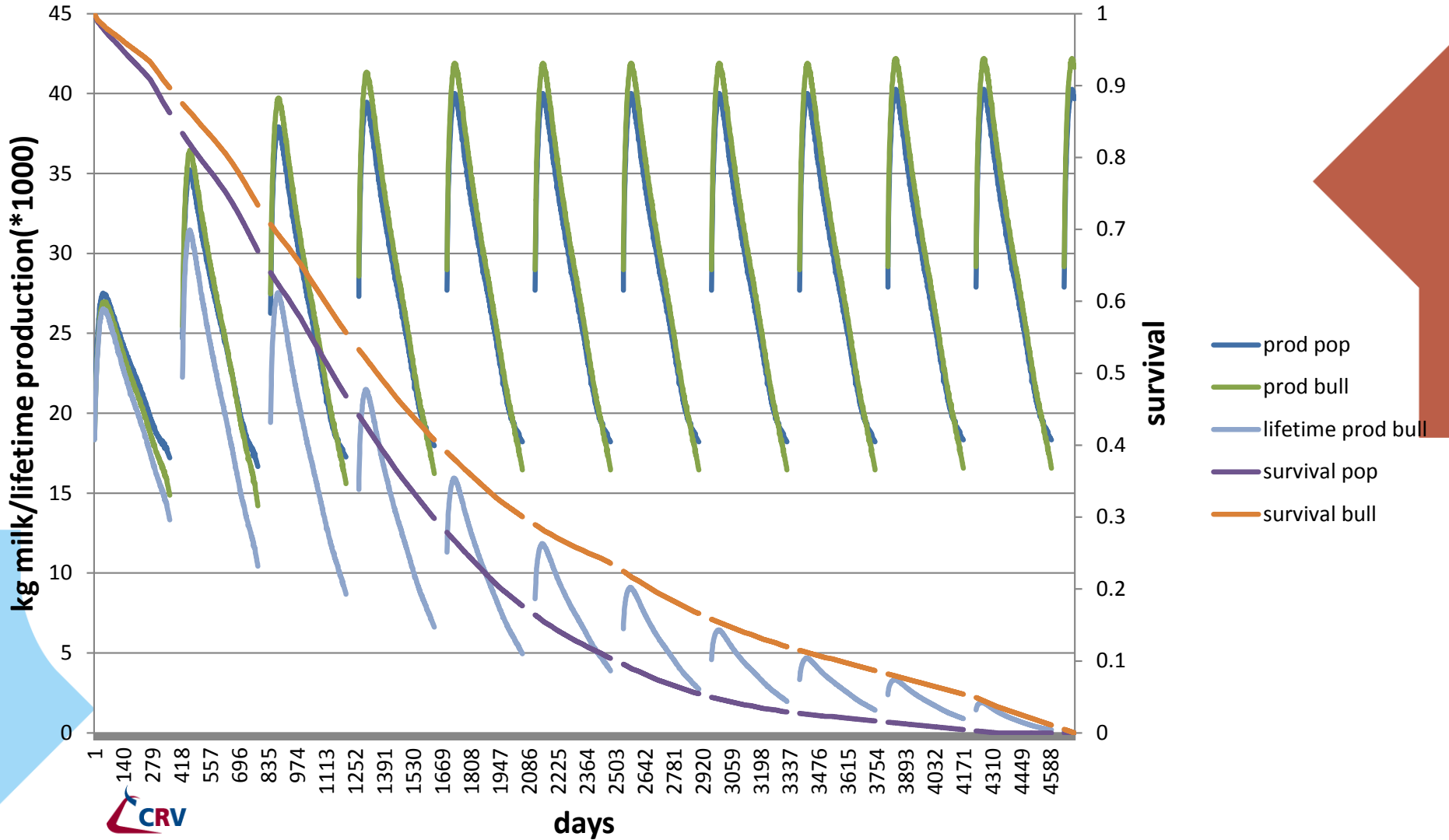
+ survival curve

Sunny Boy



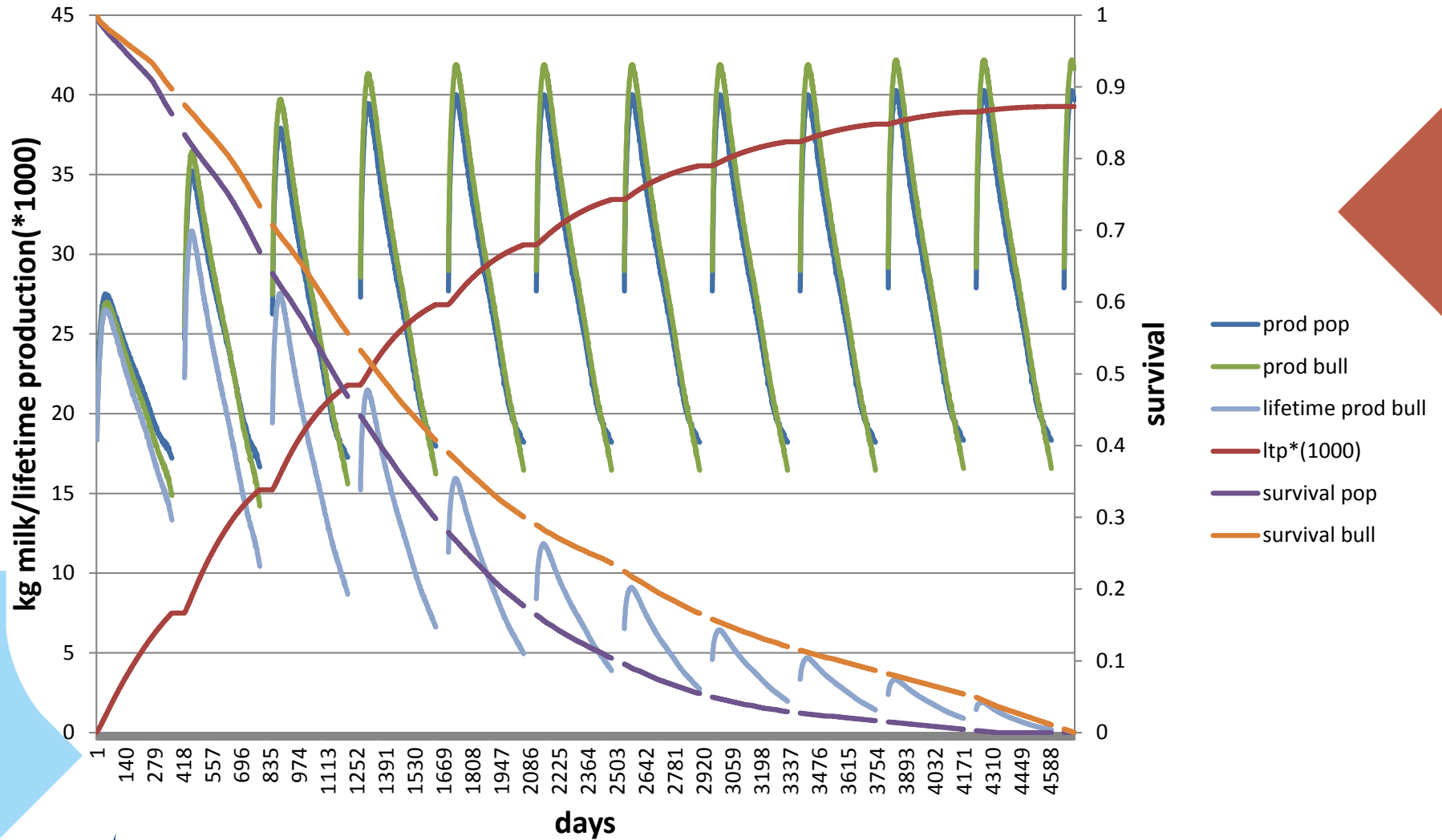
+ combine production and survival curve

Sunny Boy



Sum up production every day

Sunny Boy



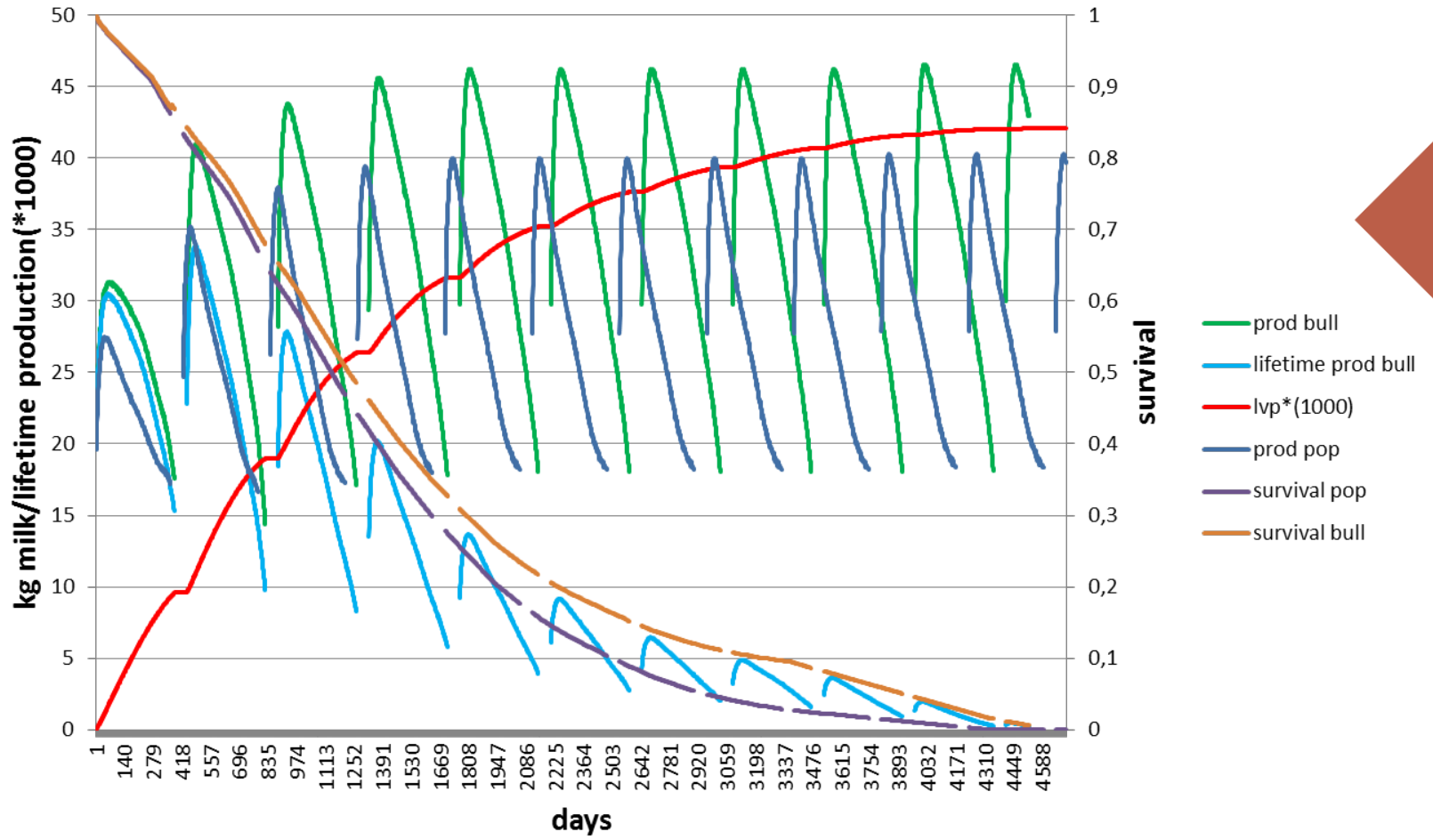
Example Addison

kg milk	+1937 kg
Longevity	+193 days
Persistency*	107 -> more persistent curve
Rate of maturity*	100
Calving interval*	95 -> longer calving interval -> longer lactation



*Relative breeding value:
Mean = 100
Stdev = 4

Addison



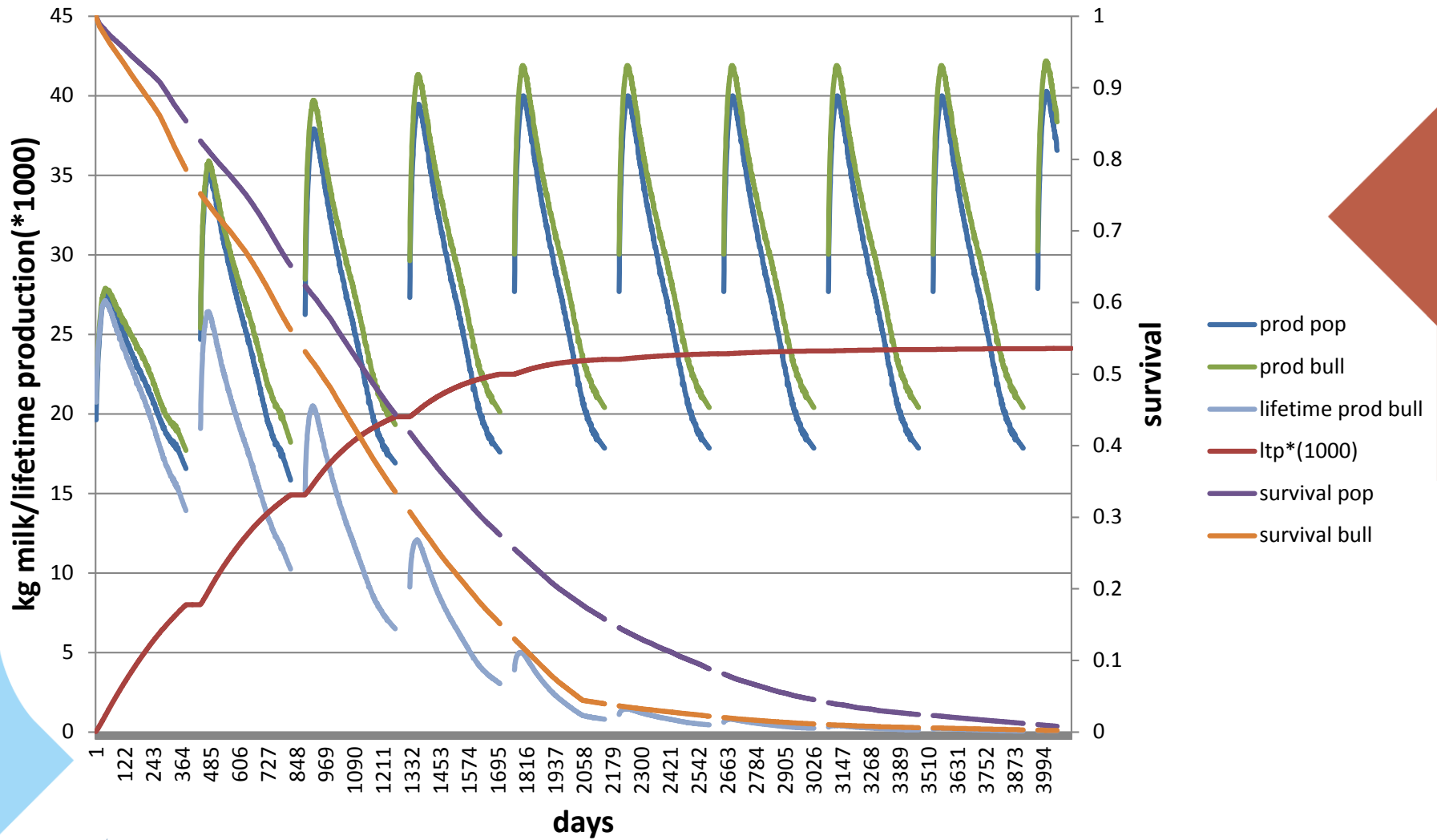
Example Louison

kg milk	+424 kg
Longevity	-254 days
Persistency*	107 -> more persistent curve
Rate of maturity*	103
Calving interval*	95 -> longer calving interval -> longer lactation

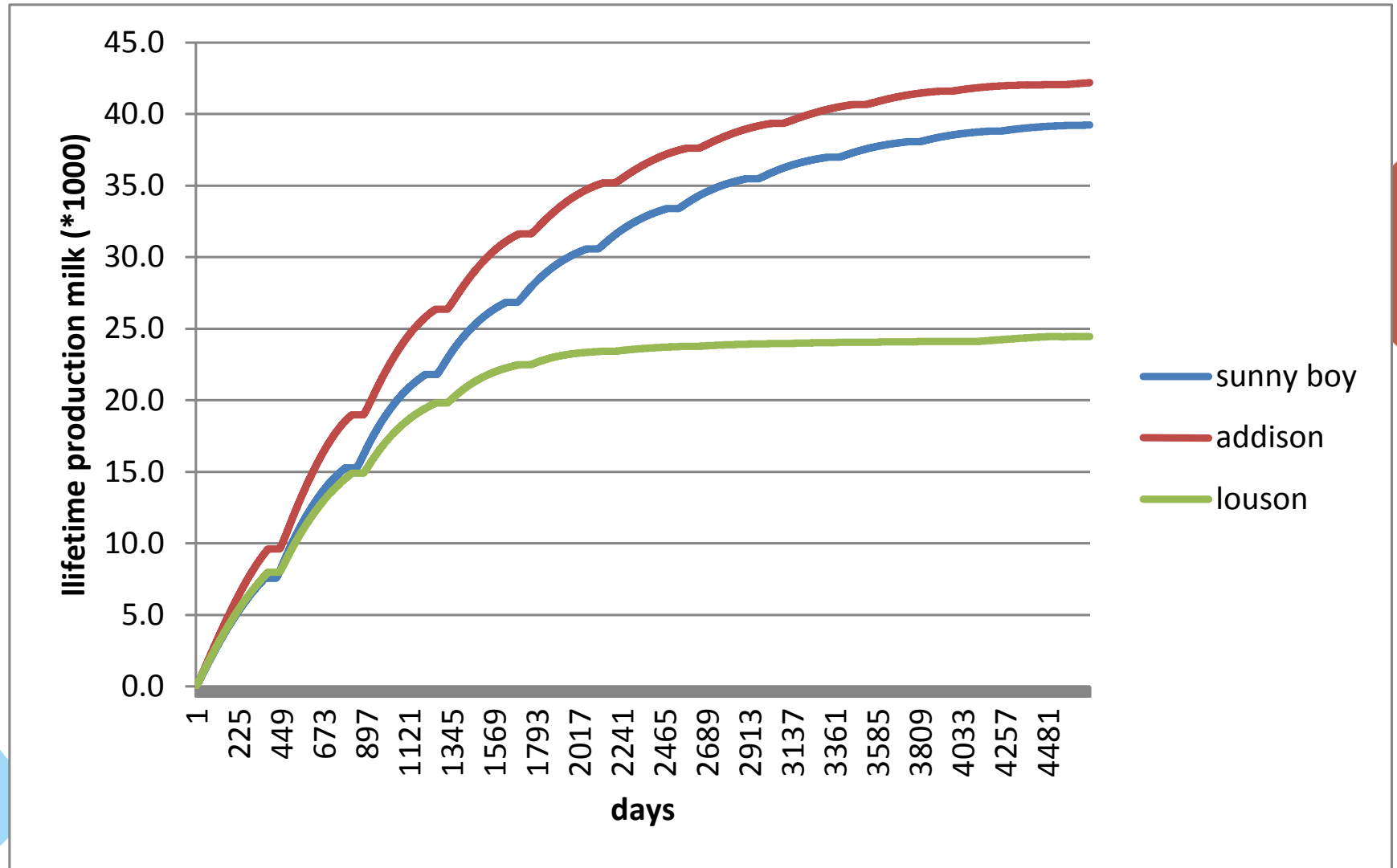


*Relative breeding value:
Mean = 100
Stdev = 4

Louson



Production cumulative per day



Life time production Index



Index is combination of milk, fat and protein

Using milk index factors

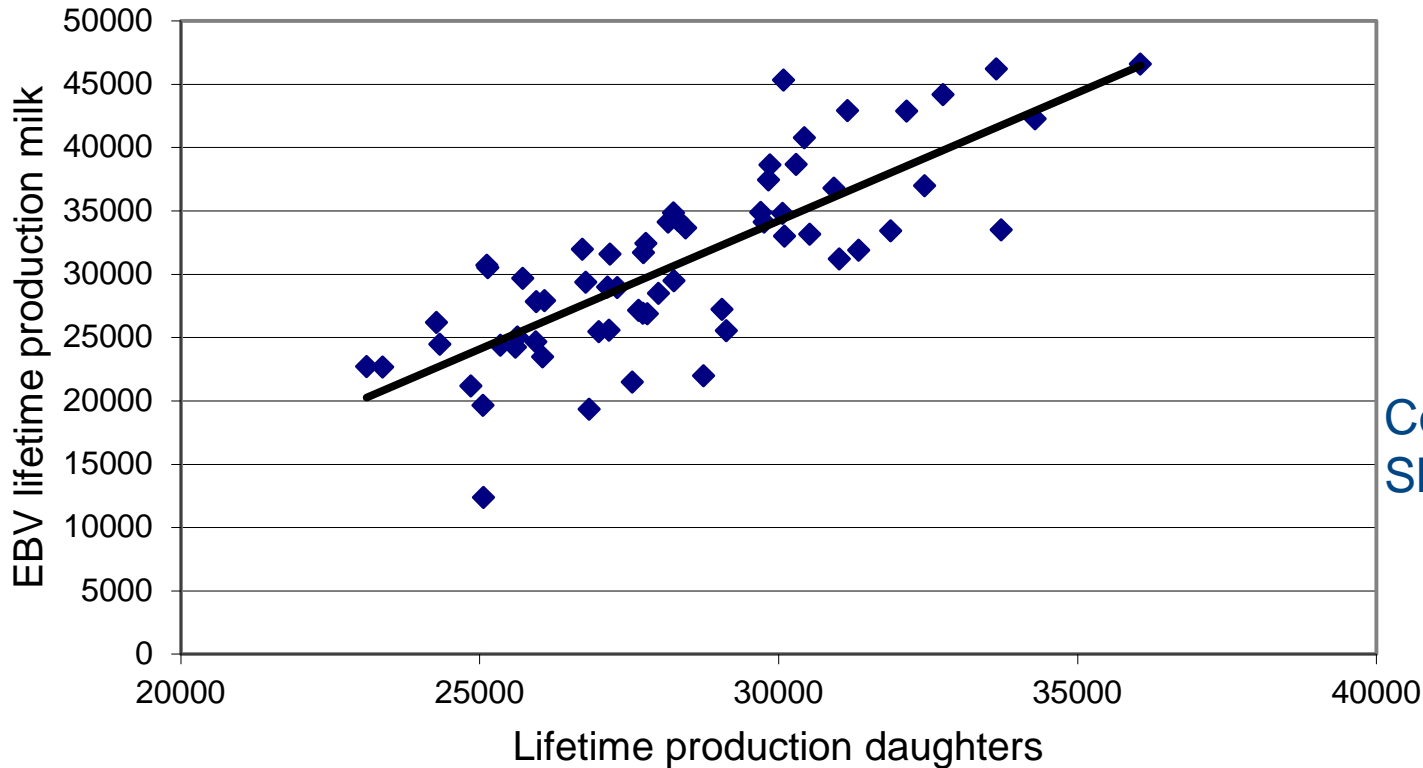
LTP Index = $-0.03 \text{ milk} + 2.2 \text{ fat} + 5.0 \text{ protein}$

Unit is euro

How does it look for our 3 bulls?

Bull	Milk (kg)	fat (kg)	Protein (kg)	LTP Index (€)
Sunny Boy	+8472	+528	+357	+2692
Addison	+11368	+191	+308	+1619
Louson	-6414	-301	-169	-1415

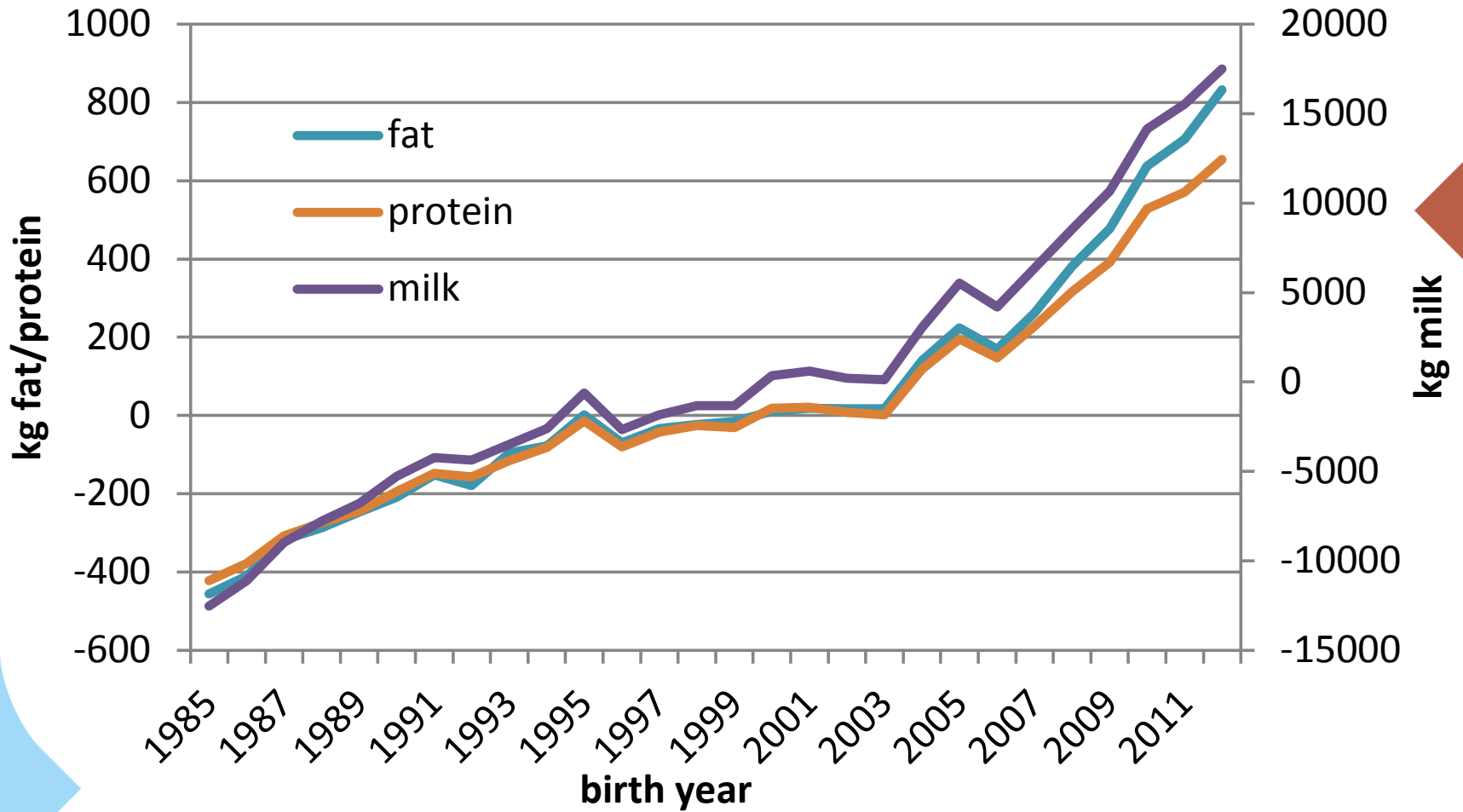
Relation breeding value – production daughters for milk yield



Validation bulls

- Daughter average based on at least 1000 culled daughters
- EBV longevity based on at least 150 culled daughters
- Bull is at least 10 years old

Genetic trend B&W bulls



What does lifetime production index add?

LTP Index = longevity breeding value

LTP Index = euro's, to be earned during a cows life
-> **economic effect longevity**

LTP Index = combination longevity and production
-> insight in dependency of production on herd life

LTP Index = helps AI's in communication with dairy farmer
-> show what breeding can do!

Thanks for your attention



Big Boukje 192

- 15.000 kg fat+ protein
- Farmer Jos Knoef