

Genetics of Future

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URUS



About me

- Pakistani
- Veterinarian/MBA
- Over a decade in UAE
- South-East Asia to North Africa.
- 1 Cow - 175,000 cows



- Semen from young bulls
 - Growth and health of bull calves
- Young female development
 - IVF, LOPU

Generation
Interval

Selection
Intensity

Accuracy

- Genomic testing
 - Early selection of best available parents
- Daughter performance data
 - Progeny prediction
- Diversity of parents

- Elite males + elite females
- Selection index strategy
 - PEAK – TPI, NM\$
 - Limited thresholds
- Focus on creating most sustainable and profitable cows

PIPELINE



PEAK 40391-ET
3396 TPI, 1404 NM\$
AltaMAKEOVER x SHEEPSTER

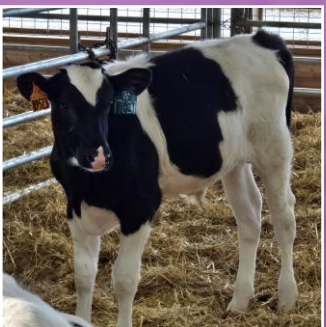


COOKIECUTTER 92469-ET
3403 TPI, 1280 NM\$
AltaINSPIRE x LETCHWORTH

PEAK CASANOVA-ET
3363 TPI, 1393 NM\$
CATAPULT x AltaEXQUISITE



PEAK STORMSURGE-ET
1430 NM\$, 3231 TPI
SHADOW x EXTREMO



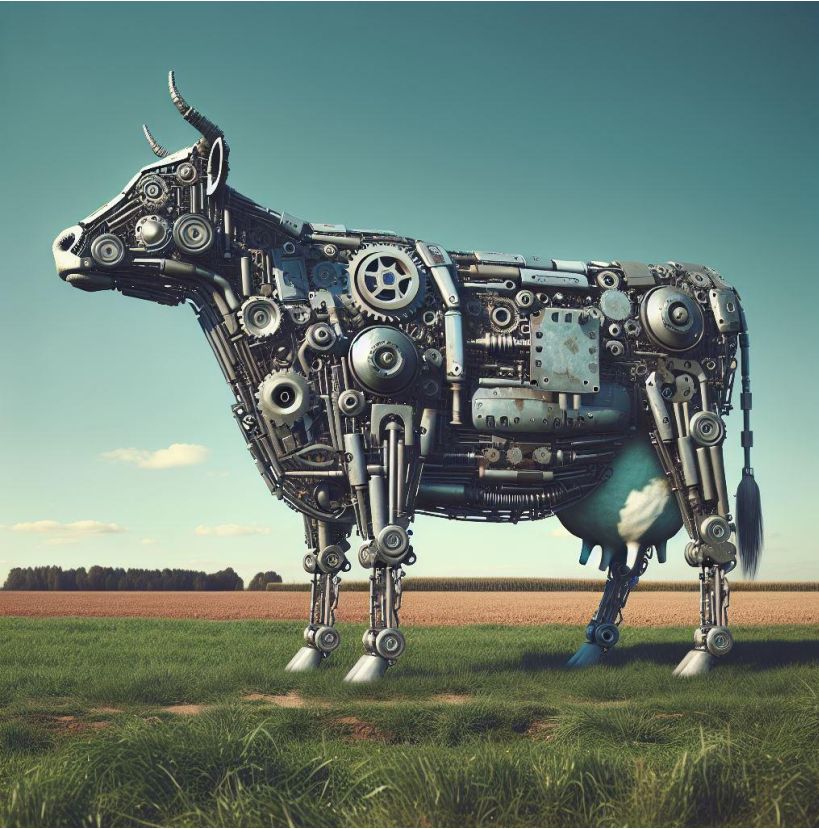
PEAK LEXION-ET
3389 TPI, 1379 NM\$
AXFORD x MERLE



PEAK SONATA-ET
1417 NM\$, 3255 TPI
MAGICMOOLA x ZAPPY

Future-Leading Genetics

What should the cow of the future look like?



Answer: *The best cows of today!*



APRIL 2025 Base Change

- | Milk | Fat | Prot | PL | DPR | CCR | HCR | PTAT | UDC | FLC |
|------|-----|------|-----|------|-----|-----|------|-----|-----|
| 750 | 45 | 30 | 2.5 | -0.2 | 0.5 | 1.0 | 0.6 | 0.8 | 0.1 |

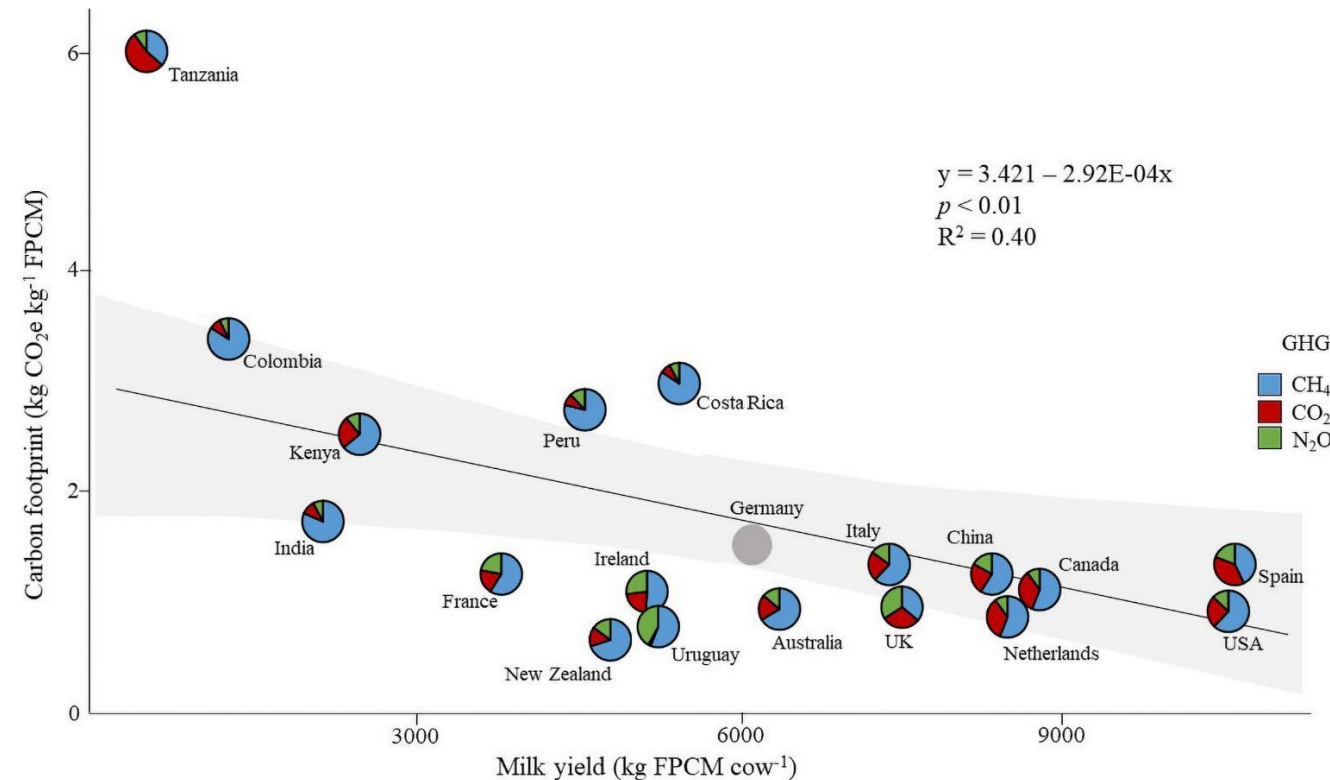
- More emphasis on Milk, Fat & FSAV
- Reducing fertility trait emphasis and shifting to CCR, HCR and EFC

[illegible]

EFFICIENCY – doing more with less

Production – *starting point*

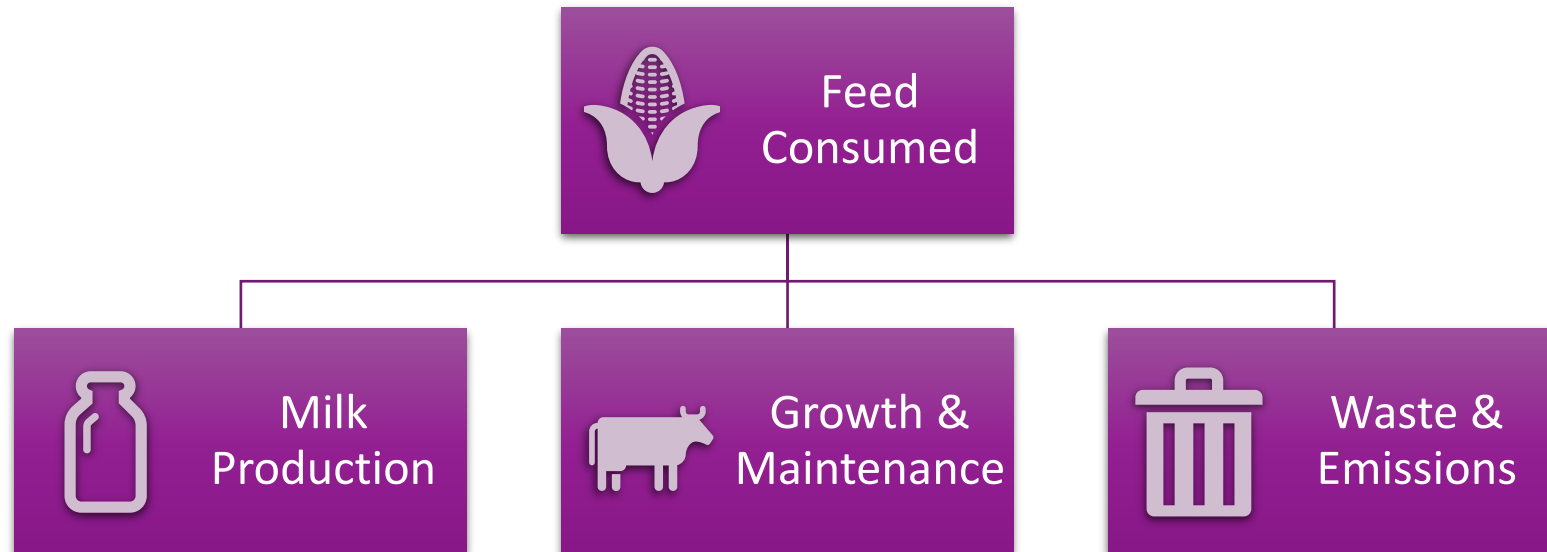
- Single largest contributor to revenue on every dairy!
- Milk vs. Components
 - How does the dairy get paid?
- Per year gains for production at record pace today!



EFFICIENCY – conservation of resources

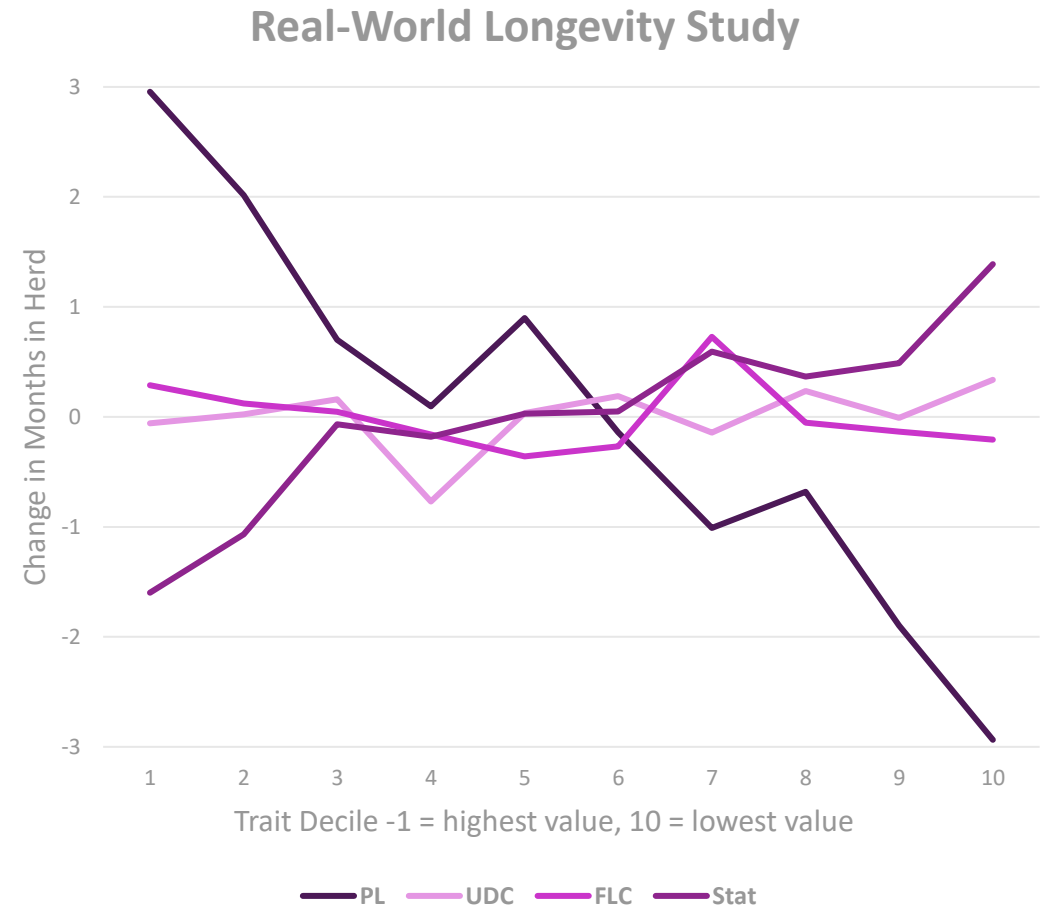
Feed – largest expense for most dairies

- Turning more feed into production is still the path to efficiency!
- Feed Saved (FSAV) is step in the right direction!
 - **FSAV** = **BWC** (body size reduction) + **RFI** (feed intake minimized)
- U.S. methane trait likely in the next 2-3 years
 - Likely to still favor efficient production and feed efficiency

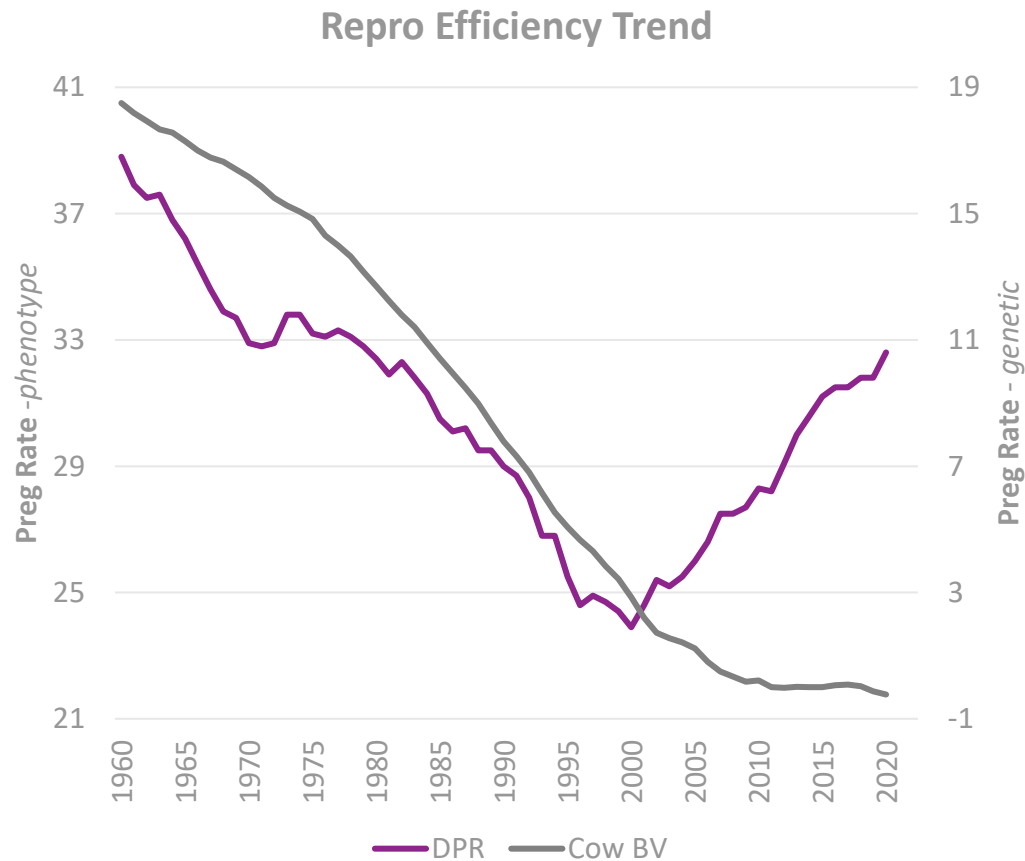


HEALTH – fertile, long-lived cows

- Analysis of AgSource data on 400K cows born 2010-2013
 - Comparison to genetic profile and culling data
- **Productive Life** with the direct genetic impact on longevity
 - Conformation traits not a good way to improve longevity
 - Negative genetic correlation to PL
 - Strong relationship with stature



HEALTH – fertile, long-lived cows



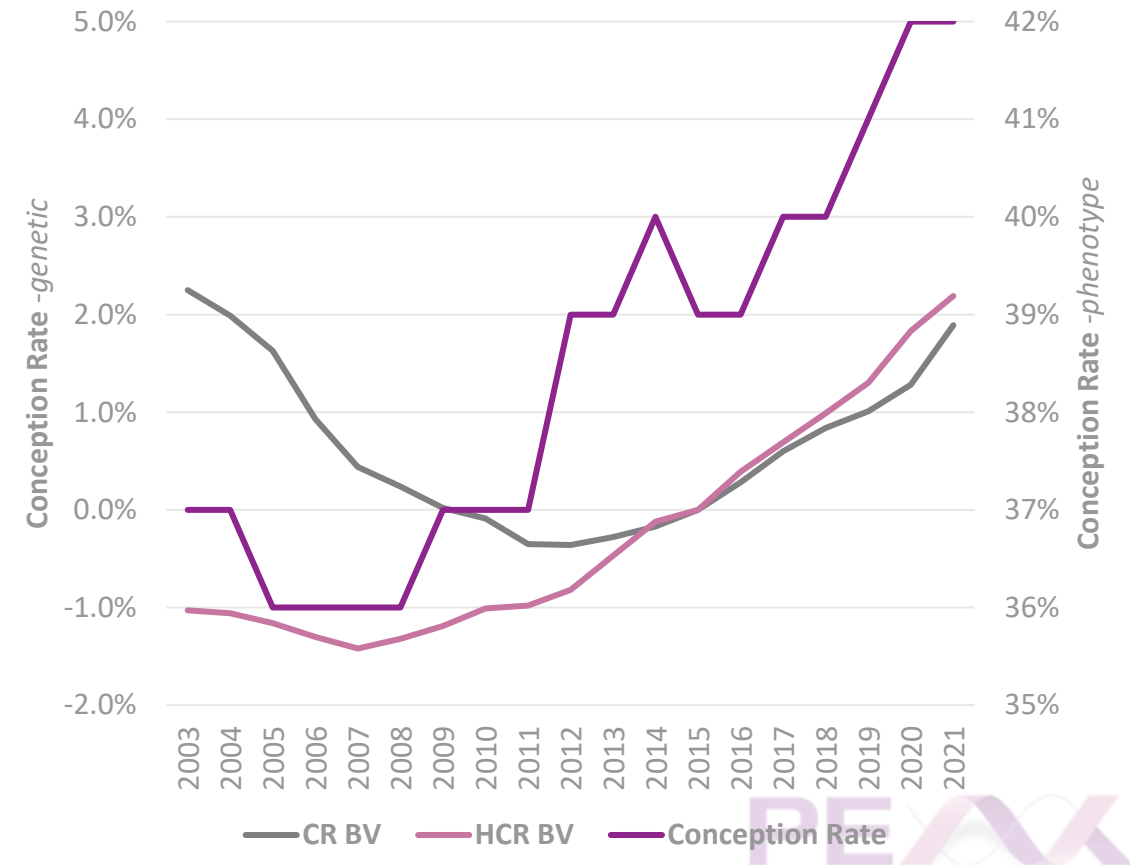
Why aren't we making genetic progress for DPR today?

- Management played a huge role in repro in the last 20 years
 - Presynch, Ovsynch, Double Ovsynch, activity monitors, etc.
- Major “resistance” to production traits
- How is DPR calculated?
 - Days Open and Translated to Preg Rate
 - 1.0 DPR = 4 days open
 - 154 days open in 2003 vs. 122 in 2021
 - Happy medium trait?

HEALTH – fertile, long-lived cows

Cow & Heifer Conception Rate - CCR & HCR

- Conception rate shows ability to turn an insemination into a pregnancy
 - Primary goal in repro programs today
- Calculated from pregnancy data
- Proven ability to improve genetic level over the last 10+ years
- Less genetic “resistance” to production
- Opportunity to focus on heifer repro



What Else?

Methane Emission trait

Individual health traits- e.g lameness

Heat Stress resilience- e.g Slick gene

Disease Resistance- e.g BoLA-DRB3 gene polymorphism linked to FMD resistance?

Gene Editing/CRISP-Cas9 e.g trait selection

Precision Livestock farming- e.g Gait sensors, milk sensors

Rumen Microbiome PTAs-e.g Microbial biome for feed efficiency



AltaENGAGE				
011HO17100				
TPI	3206		NM\$	1367
PRODUCTION				
Milk	+1537 Lbs	79% Rel	CM\$	\$1391
Protein	+86 Lbs	+0.14%	FM\$	\$1178
Fat	+142 Lbs	+0.31%	GM\$	\$1328
HEALTH TRAITS				
Productive Life	+5.7	Fertility Index	0.8	
Cow Livability	+1.7	Daughter Pregnancy Rate	-1.1	
Heifer Livability	-0.1	Cow Conception Rate	0.8	
Somatic Cell Score	+2.90	Heifer Conception Rate	3.0	

REI – Repro Efficiency Index

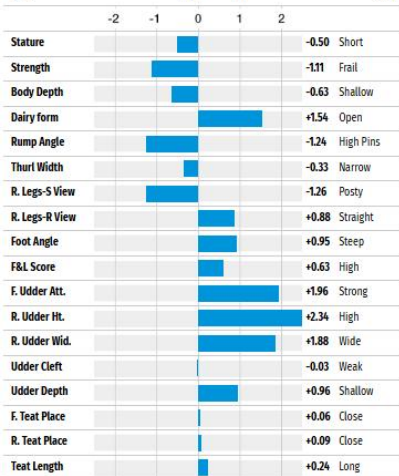
- Multi-trait selection for female fertility
 - Utilization of four repro-focused traits
 - Replace DPR as go-to number for repro
- Supports increased focus on precision insemination strategies
 - CR, sorted semen, inventory management
- Increased focus on heifer repro
 - All cows must become pregnant as heifers
 - Fertile heifers become fertile cows
- Prioritizes cow fertility performance
 - More precise matings for cows (sorted semen)

NAAB	Name	NM\$	TPI	CFP	Milk	DPR	HCR	CCR	EFC	REI
011HO17100	PEAK CH ALTAENGAGE-ET	1367	3206	228	1537	-1.1	3.0	0.8	5.8	1.2
011HO17209	PEAK ALTAHAWAII-ET	1324	3222	224	1103	-0.2	1.6	1.5	5.2	1.1
011HO17191	PEAK ALTAENIGMA-ET	1318	3160	196	1892	-0.3	0.7	1.8	5.8	1.1
011HO17251	PEAK ALTAFUNLAND-ET	1290	3243	229	1268	-0.3	1.4	2.0	5.9	1.2
011HO17079	PEAK ALTAFIELDGOAL-ET	1239	3252	225	1224	-1.7	4.1	1.1	4.7	1.2
011HO16842	OCD PEAK ALTAJTOWN-ET	1232	3162	210	1859	-1.0	2.5	2.2	3.8	1.1
011HO17015	PEAK ALTACADENCE-ET	1223	3205	197	1928	-0.8	3.6	1.4	3.0	1.1
011HO16927	PLAIN-KNOLL ALTAHUBBLE-ET	1212	3158	187	1854	-0.3	2.6	1.5	4.8	1.3
011HO17170	PEN-COL ALTASKIPPER-ET	1194	3110	206	2290	-1.9	3.3	0.9	5.9	1.2
011HO16884	PEAK ALTAOVERLOAD-ET	1168	3132	229	1945	-1.5	3.4	1.9	7.3	1.6



CONFORMATION Based on 87 Daughters in 11 Herds (89% Rel)

PTAT	0.92	UDC	1.73
BWC	-1.74	FLC	0.83

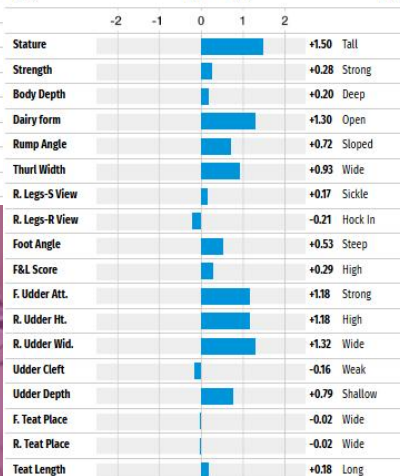


AltaVANDYKE



CONFORMATION Based on 0 Daughters in 0 Herds (79% Rel)

PTAT	1.12	UDC	0.63
BWC	0.11	FLC	-0.13

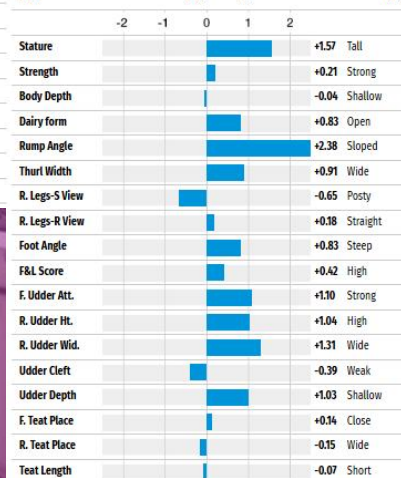


AltaFONSI



CONFORMATION Based on 0 Daughters in 0 Herds (78% Rel)

PTAT	0.70	UDC	0.60
BWC	0.27	FLC	0.05

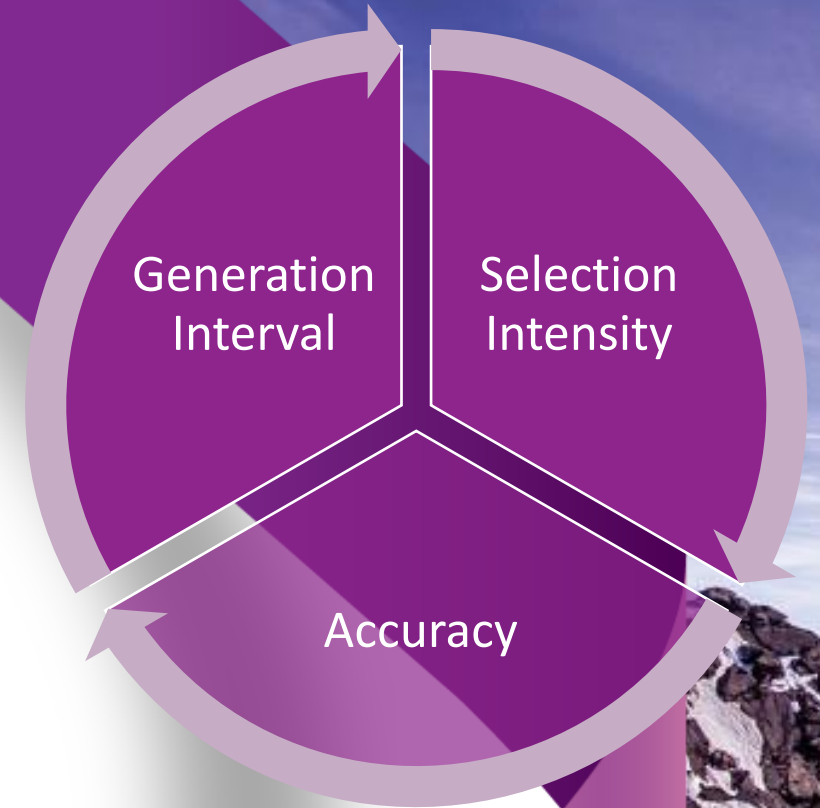


MUI – Modern Udder Index

- Focus on functional, durable udders
 - Aligns udder selection with data on maximal lifetime ECM production
 - Addresses trend toward shorter, closer teats
 - Does not make cows bigger!
 - Today's UDC = bigger cows, worse milkability
- Complements focus on longevity (PL)
- Positive relationship with production
- Industry-leading step towards conformation maintenance phase

Summary

- Keep the most important thing, the most important thing!
 - Align herd goals to selection index
 - Let the selection index do the work
 - Minimize threshold traits
- Use best bulls possible on the smallest group of highest females



Questions and Discussion



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