

A Complete Custom Breeding Program: Setting Goals, Strategies, Selection and Execution



Who Am I?

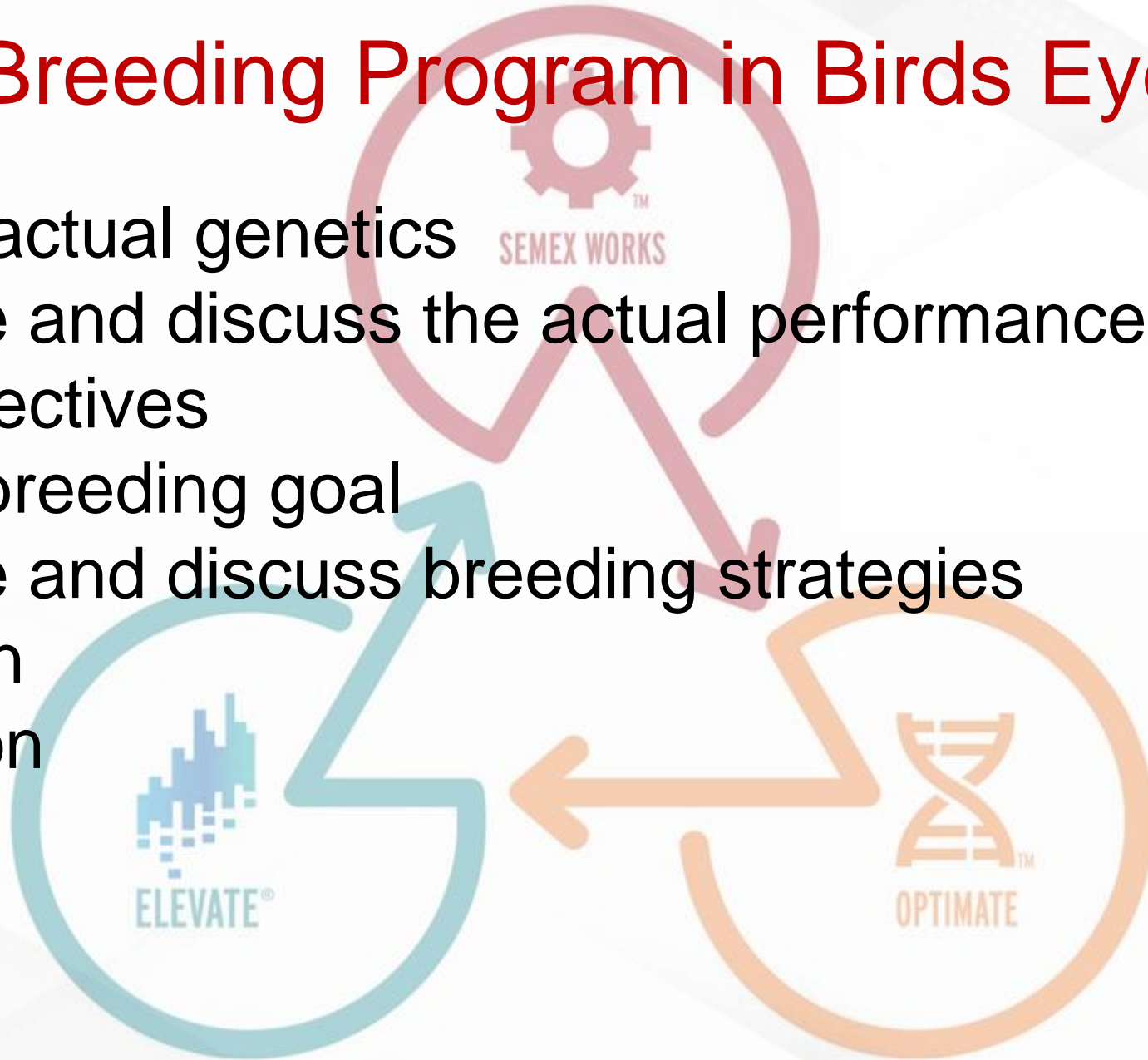


- **Peter van Beek, MSc**
Director, Global Key Accounts
- Born and raised on a dairy farm in south of the Netherlands
- Obtained a Master degree in Animal Sciences at Wageningen University
- Specialized in genetics, young calf nutrition and dairy farm economics



Custom Breeding Program in Birds Eye View

1. Review actual genetics
2. Evaluate and discuss the actual performance and farm objectives
3. Decide breeding goal
4. Evaluate and discuss breeding strategies
5. Selection
6. Execution



Review actual genetics: HerdView Genetic Audit

- Evaluate the actual pedigree completeness, genetic levels and inbreeding/haplotype levels
- Identify potential weaknesses and undesirable genetic trends
- Potentially consider **Elevate™** genomic testing to increase accuracy



No Single Trait Selection




- Multiple traits are getting a weight
- To make them comparable at the same scale, they are standardized

Total Merit Index =

$$\text{Weight}\% t1 \times \frac{t1 \text{ EBV}}{t1 \text{ STDEV}} + \text{Weight}\% t2 \times \frac{t2 \text{ EBV}}{t2 \text{ STDEV}} + \dots$$



What Gets Focus, Gets Results!

		TPI	PTAM	DPR	70% PTAM 30% DPR	50% PTAM 50% DPR	30% PTAM 70% DPR
Graziano		3001	+89	+1.6	479	694	909
Raptors		2935	+924	+0.2	1189	893	597
Fellowship		2988	+1572	-2.2	1436	542	-35

What Gets Focus, Gets Results!

Lactation 1

Group PTAM	#	PTAM	305M	305ME
High 33%	60	1036	10107	13173
Mid 33%	60	528	9533	12358
Low 33%	61	56	8987	11704
Total	181	537	12408	12408

Correlation PTAM / 305M 0.40

Correlation PTAM / 305ME 0.41

**Dataset from large dairy in central Europe, where we looked at relationship between genomic PTAM and realized milk production during 1st lactation*



Global Indexes



Source: Holstein International, Dec 2021

Estonia (SKAV)



Total Merit Index

- A selection tool, which combines multiple traits (production, health and fertility, conformation). It assists farms to select the best bulls ranked according to a country index
- In general, each country has one or two selection indexes, based on:
 - Desired gains (SKAV, TPI, LPI, RZG, NVI)
 - Economics (PRO\$, NM\$, RZ€)





“Our national selection indexes serve as really good general guides, but it is not possible to develop a single index that fits all farms perfectly.”

Dr. Chad Dechow, Associate Professor of Dairy Cattle Genetics, Penn. State University USA





SemexWorks™

Evaluate and discuss the actual performance and farm objectives, decide breeding goal



Farm-specific economic values and ROI



Rank sires best for your dairy

SemexWorks™

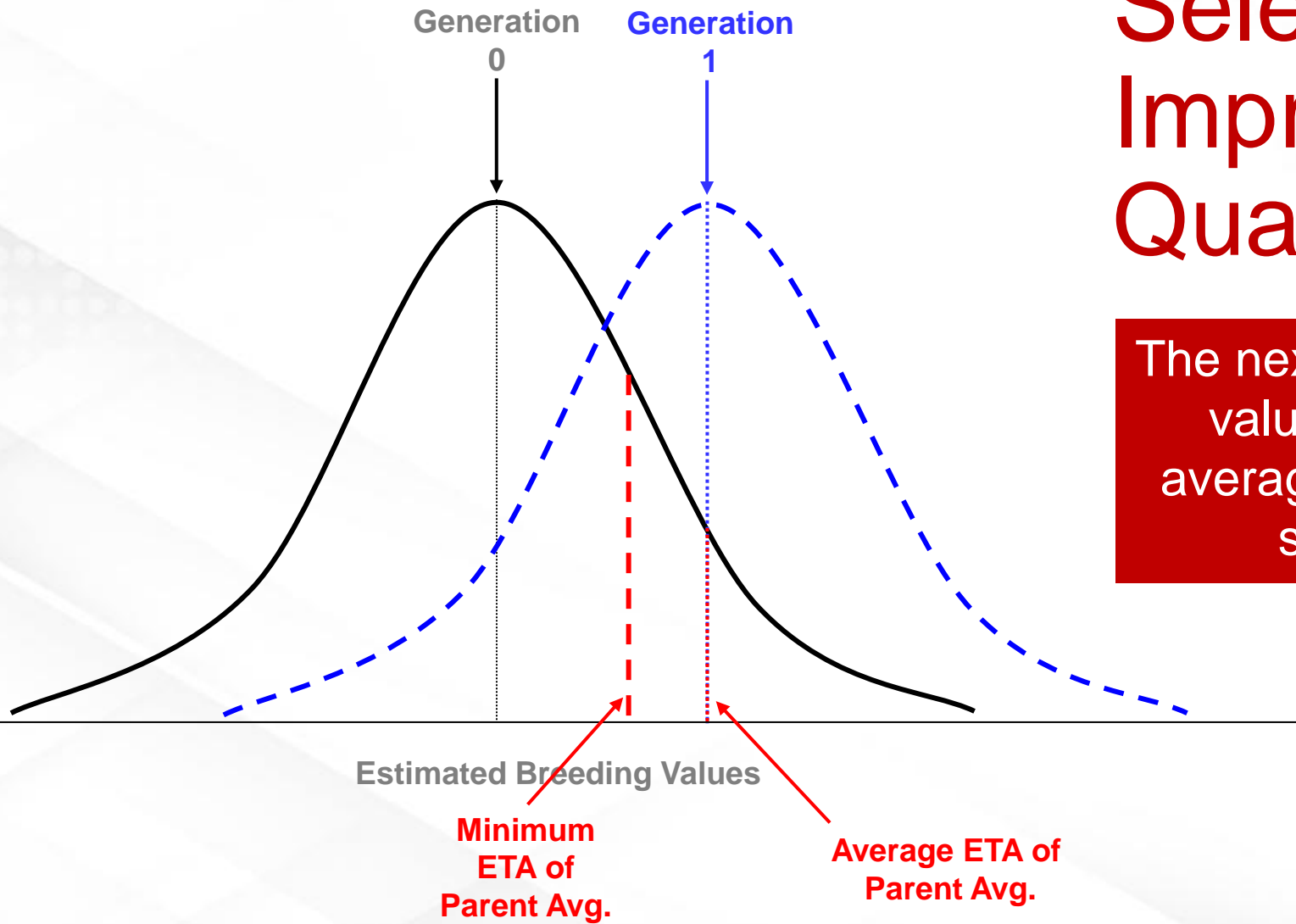
SemexWorks is a powerful, easy to use tool empowering the client to define their farm economics and the specific needs for their operation from a genetic viewpoint.

Clients compare their farm-specific economic values and return on investment by looking at the different genetic options available. It's an open book - The Semex genetic consultant simply helps the client determine the future that is best for him.



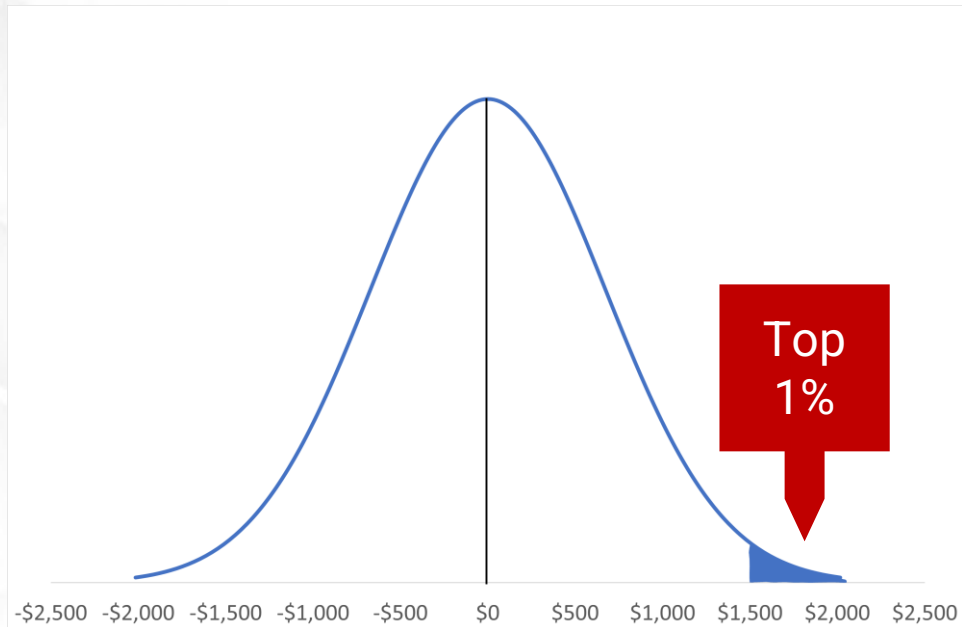
Selection Improvement of Quantitative Traits

The next generation breeding values are equal to the average breeding values of selected parents



$$\text{Genetic Progress} = \frac{\text{Selection Intensity} \times \text{Accuracy} \times \text{Variation}}{\text{Generation Interval}}$$

Bulls



Cows and Heifers



What Is The Intensity Of Our Selection?

Do We Have Better Selection Possibilities In Cows and Heifers Today?

- Improved replacement rates (lower!) allow to raise less replacements and be selective on which to be raised
- Sexed semen in combination with a terminal cross with beef semen help to be more decisive in choosing dams of next generation
- Genomics helps to be more accurate in selecting the best females to produce the next generation



Selection Intensity

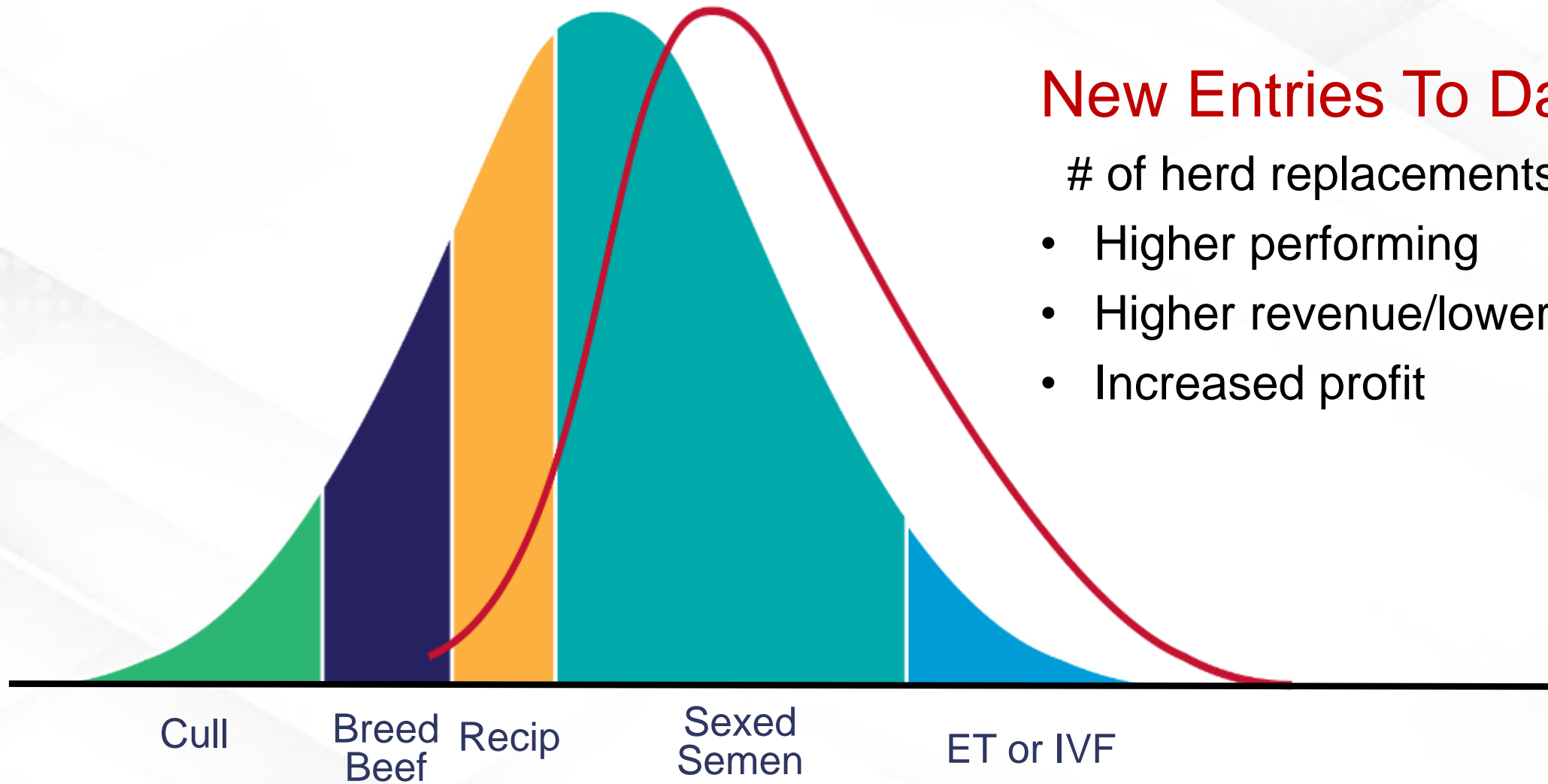
- The difference between the average of animals selected to breed the next generation compared to whole herd average
- Culling: Culling the bottom 20% of a herd can increase the average economic value of the selected group by nearly € 100.
- Beef: Using beef on the bottom end can do the same
- Sexed: Sexed semen on the top end ensures heifers and cows from the best genetics – means increased selection intensity



New Entries To Dairy

of herd replacements

- Higher performing
- Higher revenue/lower cost
- Increased profit



Evaluate and discuss breeding strategies



- 6 Put it into action
- 5 Does genomics pay?
All?
- 4 Which strategies fit clients' goals
- 3 Optimal combo of strategic options that
produces the highest economic return
- 2 Using economic parameters on the
farm, expansion plans & animal data
- 1 Consider all possible strategic
options for a client



Elevate[®]

THE INDUSTRY'S ONLY AUTOMATED
GENETIC SELECTION TOOL





Our female genomic test, Elevate[®], gives fast, easy access to vital female genomic information that increases genetic gain, corrects parentage errors, manages inbreeding and helps clients make confident mating decisions.

- Elevate[®] offers more than just a genomic test. The Elevate strategy optimization is a tool like no other
- Using real farm data, it helps us to manage costs, right size inventory and maximize genetic gains
- Determines best ratios of IVF/ET, sexed semen, conventional semen, beef semen, culling and gives the flexibility to adjust ratios based on what is practical and fits the dairy
- Recommend genotyping only the animals that make sense (not all!)
- To be effective though we must be sure we are getting accurate data, establishing the right goals, and regularly re-evaluating with the client.





ELEVATE YOUR HERD



Advanced strategic tool to maximum economic return



No paperwork – No data entry



Easy, seamless sample collection



Genomics automatically applied in your decisions & mating



Genomic results & follow-up actions via the phone



Competitive pricing



Immunity genomics



Execution



THE ULTIMATE USER EXPERIENCE WITH
HIGH QUALITY VISUAL REPORTS





Work side-by-side with
your Semex advisor to
build your mating
strategies



Tailor matings to
deliver your needs
and goals

OptiMate™

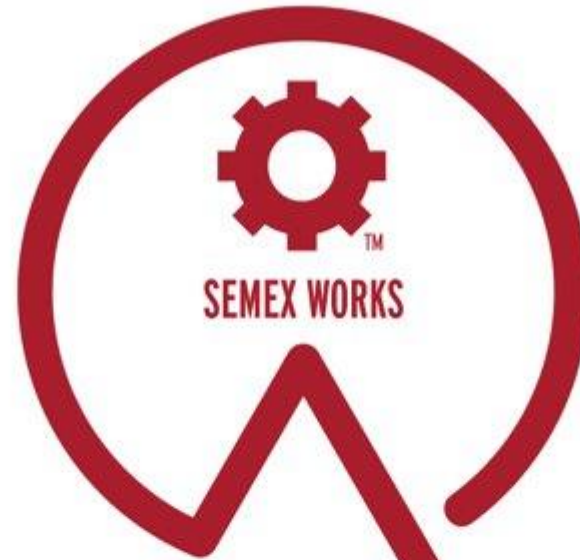
Maximizing your results!

A new, ground-breaking mating program that's fast and easy, yet incredibly powerful! Clients get instant results with complete herd forecasting allowing them to manage inbreeding and maximize genetic gain.



Breeding goal

Selection



Genomic Testing

Strategies



Execution



Key Take-Aways

- There is no such thing as a one-size fits all breeding goal; work with your genetic supplier at a tailored-custom genetic strategy
- Make sure your genetic consultant reviews the actual genetic make-up and get insight about the goals and objectives
- Utilizing the tools from today (sexed, beef-on-dairy, genomics and potential embryo technology) can expedite genetic progress on the female side as well



Questions?

