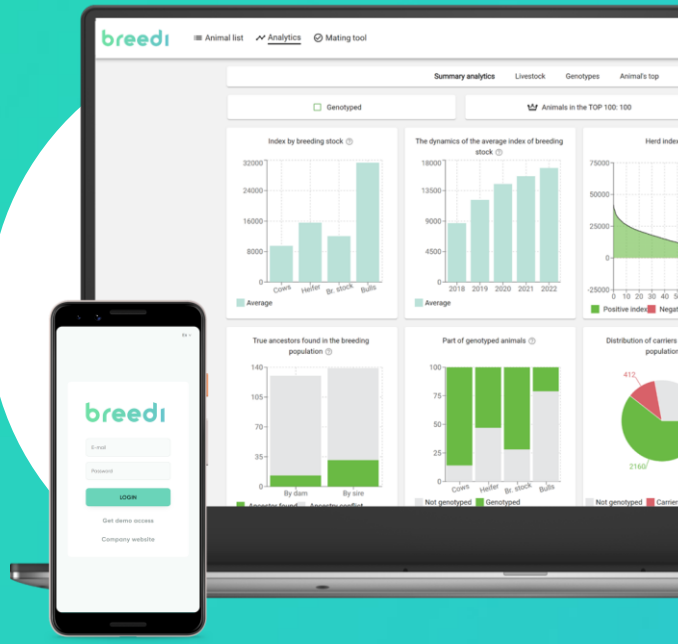
breedi

Development of analytical tool for dairy cattle genetic progress assessment



ICAR

46th ICAR-Interbull annual conference
Bled, Slovenia, 2024

breedi.app

Genomics is effective, but how to persuade farmers to use it?

Even in the leading countries with developed genomic selection systems not all farmers use genomics!

Rates of **farmers that use genomic information and evaluations** when making a breeding decision

50-90%

in developed markets

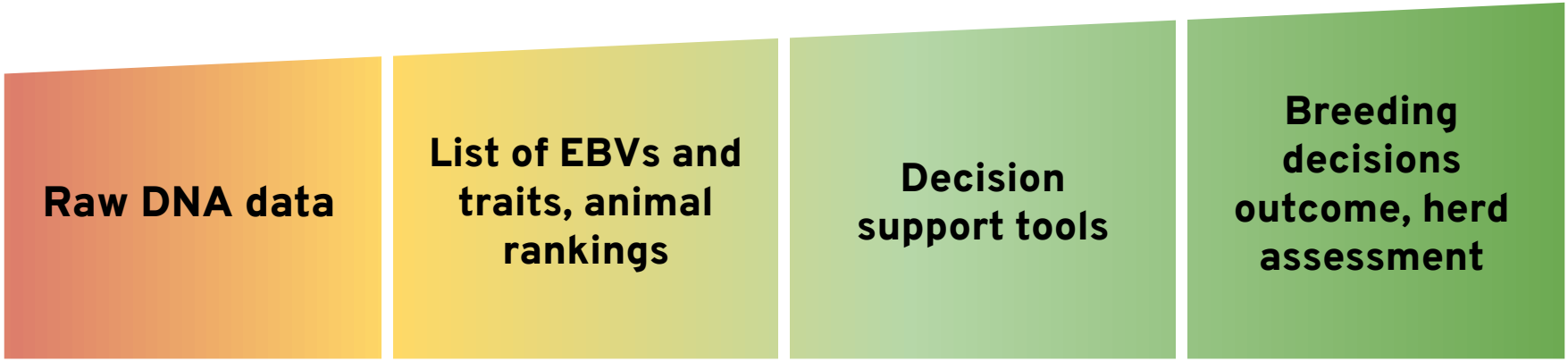
10-20%

in emerging markets

How to ease the adoption of genomic methods in breeding?

We try to understand, what differs in countries and farms which have successfully implemented genomic selection methods from the ones that have not

So far we see great difference in the ways genomic data is provided to the farmers



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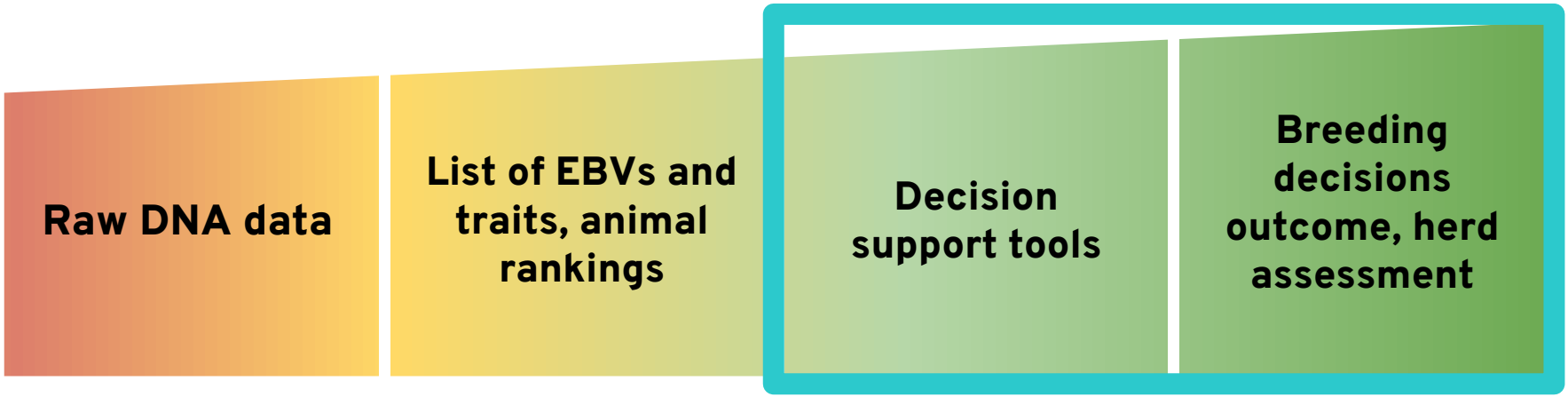
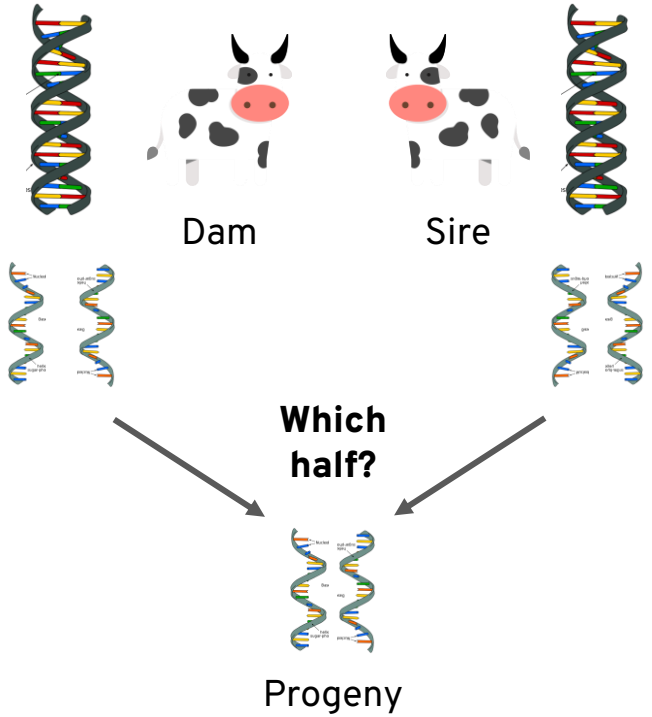


The common belief is that all progress happens because of bulls

50% of the progenies' genotype is from the dam

Without genotyping female part of the herd predictions on how herd will progress are not reliable

Do you have that common belief amongst your farmers?



Case study evaluates the impact of breeding decision support and maternal herd assessment impact to herd genetic progress

Farmer X

- 12 000 animals
- 5 000 milking cows
- 2000 of them genotyped and evaluated
- Culling rate - 10% per year
- Use sexed semen on all animals
  - Best bull - $NM 1200
  - Worst bull - $NM -200
- Average year-to-year genetic gain in herd - about 1%

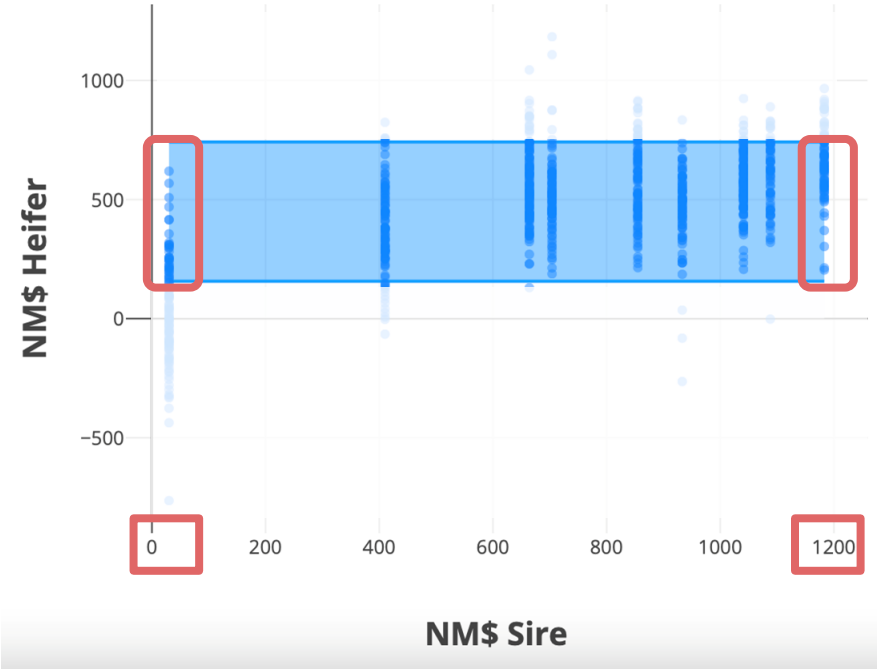
We demonstrated to this farmer that with the same bulls, same culling rate, he could achieve more genetic gain - **up to +2% $NM growth in a year.**

How? By using evaluations and making informed breeding decisions.

We compared NM$ between genotyped heifers and their sires

Last insemination results analysis

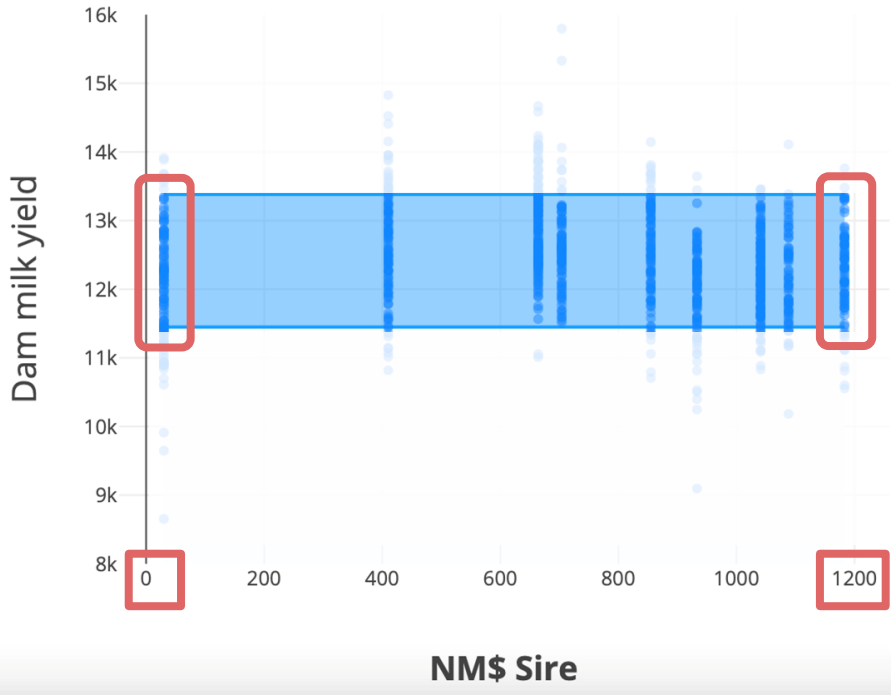
We noticed the absence of any correlation, and were asked to find a reason



The reason is that in mating decisions even mothers' phenotypes were not considered

Last insemination results analysis

There is also no correlation for other phenotypes (fat, protein, fertility, health etc)



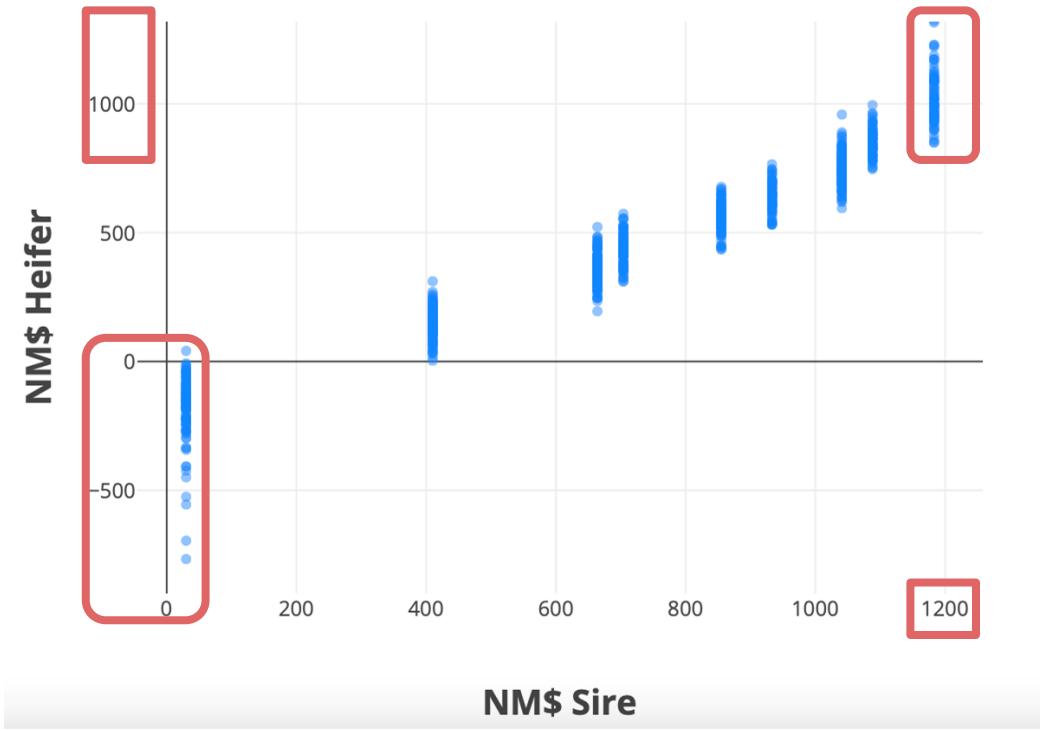
Last mating reassessment

Same bulls – different mating approach

Informed mating - based on female herd EBVs.

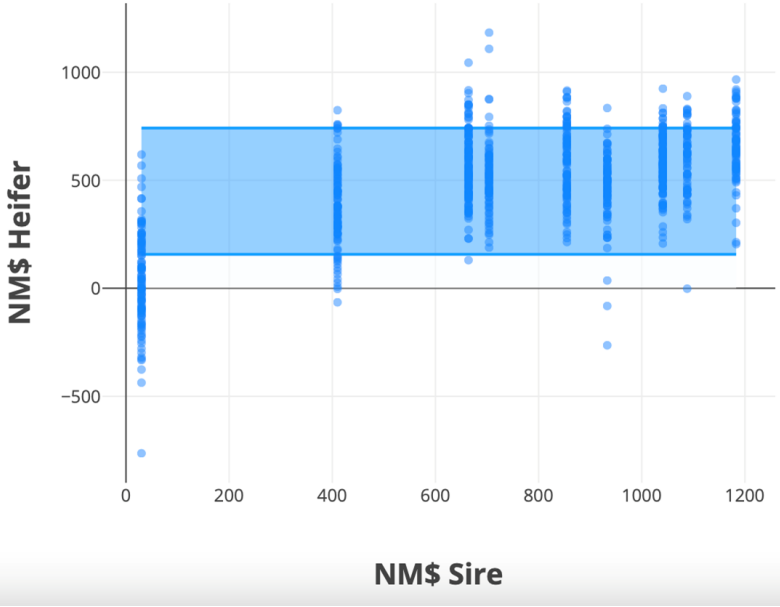
Cows are distributed in groups according to EBVs.

Bulls and cows are mated in a way to make the progenies' evaluations better than mothers'.

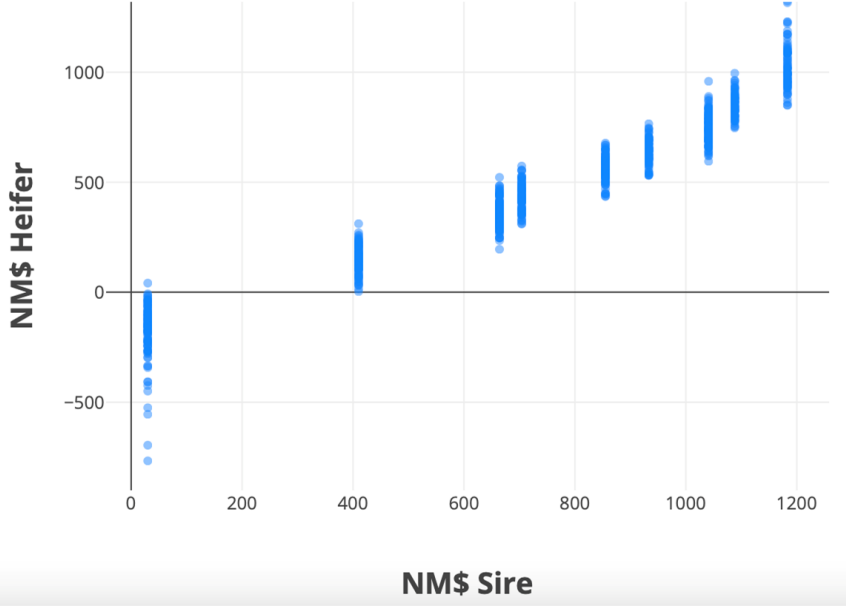


Two mating decisions with the same bulls

Initial mating, without maternal herd genomic evaluations consideration



Same bulls, but mating with genomic evaluations of maternal herd

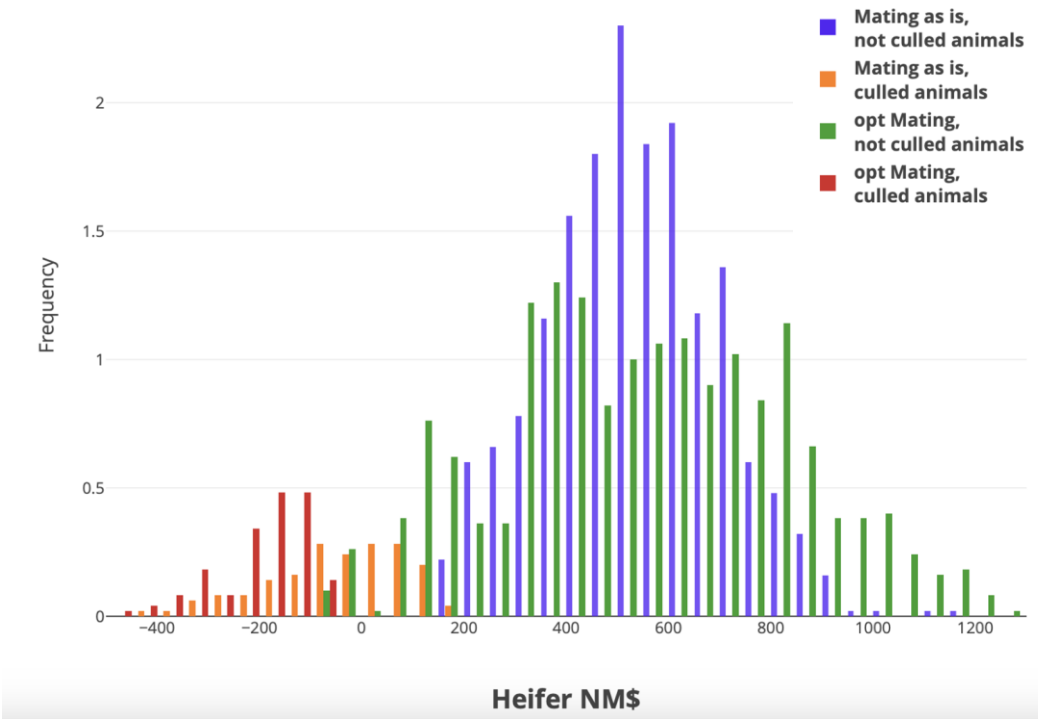


Lost/possible outcome of mating process optimization

+$60 / +2%

additional avg. NM$ for progenies

Potential genetic gain changes from 1% to 3% in a year because of informed mating and culling decisions only

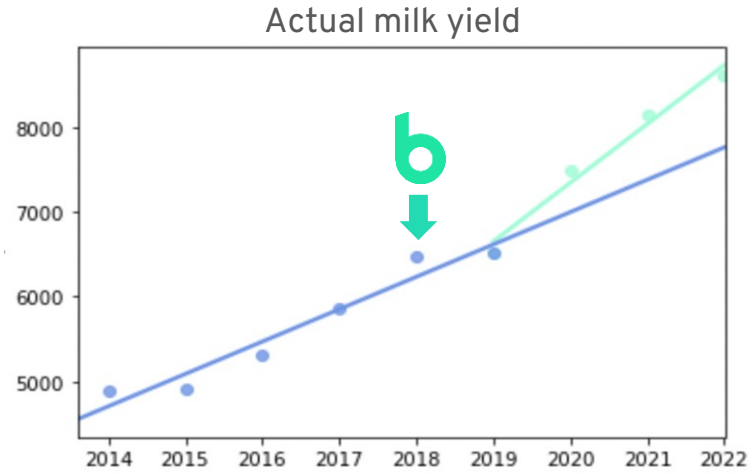


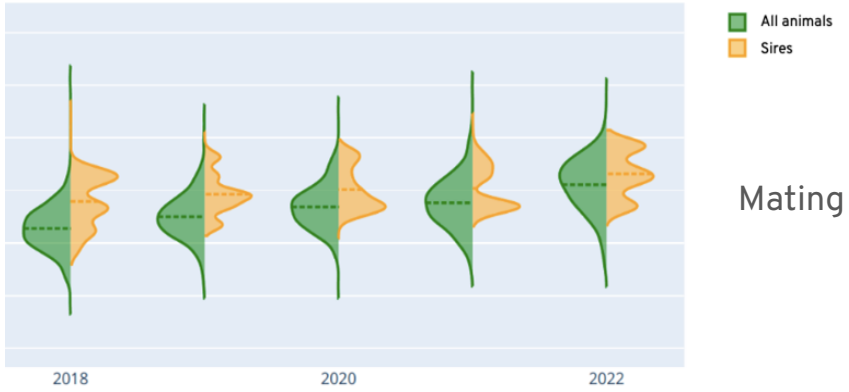
We also performed retrospective mating decisions analysis

Mating decisions were the main reason for low year-to-year genetic gain

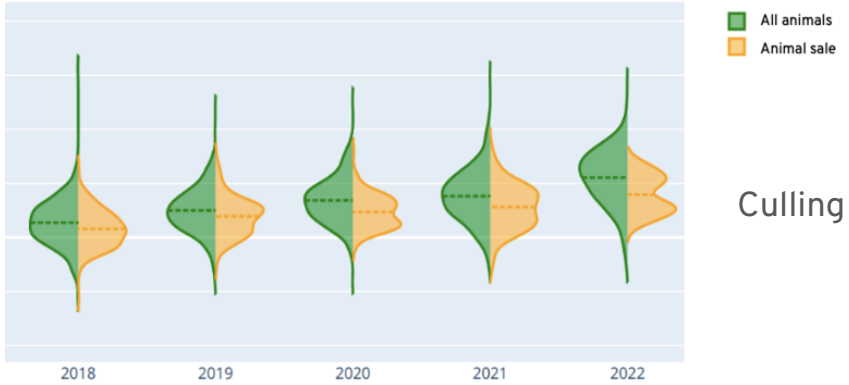
Improved mating and culling decisions enhance overall herd performance

Example of a farmer that genotype maternal herd since 2018, and uses our decision support tools since 2019





Mating



Culling

Key takeaways

- Using the same original resources, a farmer can achieve greater genetic gain and profit through informed breeding decisions
- It's crucial for farmers to understand the impact of their decisions on their future herd
- Do not underestimated the way genomic evaluation data is provided to the farmer

Accessibility of genomic data impacts the adoption rate of genomic selection methods

97%

Of our customers use our tool for at least 1 breeding process

67%

Use it for at least 2 breeding processes

We want to start open discussion

- How do you guide farmers towards proper genetic progress?
- How you motivate them to use genomic selection in their routine breeding decisions?
- Which tools and approaches allow for easier genomic selection adoption by farmers?

We’re launching survey to study how different associations and other service providers motivate farmers to use innovative breeding methods.

Reach out to us, we’re happy to share and discuss our experience and learn about yours!

Survey results will be shared with all participants and ICAR members.

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ICAR
ACCREDITED DNA DATA INTERPRETATION CENTRE

ICAR
ASSOCIATE MEMBER

Thank you for your attention

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