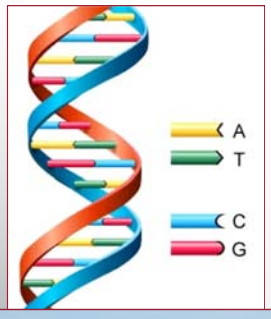
WASHINGTON STATE UNIVERSITY




# Dairy Cattle Genomics: Fertility and Animal Health Where do we go from here?

Dale Moore, Washington State University

Workshop partially supported by USDA NIFA AFRI grant No. 2013-68004-20365

## Where do you want to go with this?

## Four dairymen share their strategies for genomic technology

Melissa Hart for Progressive Dairyman  Published on 24 August 2016

0 Comments

**Related**

How are genomics working on your farm?

That was the topic of a panel discussion at the Great Lakes

## What we'll discuss…

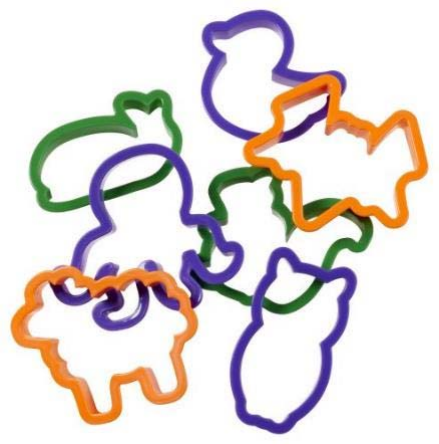
- Need a plan when genomic testing
- Working with your veterinarian and genetics consultant
- Importance of record keeping
- Measure and manage
- Re-evaluate

- **P**LAN
- **A**DVICE
- **R**ECORDS
- **M**EASURE
- **E**VALUATE

## What we hope to accomplish is to:

- Provide some tools and resources to help you gain momentum on genomics/genetics knowledge
- Help you consider a road map for investigating genomic testing technology for your or your client's herd
- The best strategy – takes a team

## Genomic testing can lead to herd profit potential, BUT There is no cookie cutter approach!



## Differences between farms

- Depends on market for milk
- Where the herd is now with genetics
- Where the herd is now with performance
- Personal farm goals

## You Need a Plan

- What are your herd goals?
- What are you going to do with the information?
- What is the **strategy**?
- What do you measure to see if you meet your goals?
- What do you do if you don't? What do you do if you do?

## What are your goals for the herd?
## Cornell's Top 10

- Maximize milk component production
- Seek marginal milk opportunities
- Don't lose fresh cows
- ID and cull low value / low profit cows
- Ensure management protocols are WORKING and being followed
- Don't incur heifer rearing costs longer than necessary
- Maximize your reproductive program
- Optimize neonatal management
- ID ration opportunities while tracking net milk income/ feed $$$
- Maximize feeding program

Can any of these be addressed through genomic testing and strategic culling and breeding strategies?

## Once you have a goal…Where is the herd now?

- Milk components
- Milk yield and milk income over feed costs
- Fresh cow culling rates
- Age at first calving
- Calf morbidity/mortality/STP
- Feed efficiency
- (FROM YOUR HERD RECORDS)

- **Sires used**

## Based on Herd Records Evaluation and Bull Use

- See where the cows are and use the data to set a SMART goal
- Goals will also depend on what your market for milk is

## Bull data

**SIRES\8 = Averages of 110 identified sires from 21,466 BRED events**

| Identification | |
|---|---|
| NAABCod | |
| NAABNam | |
| BullReg | |
| Breed | |
| StudCod | 13 |
| BullSir | |
| | |
| BullMGS | |
| BirthDa | - |

| Semen | |
|---|---|
| SemPric | 21.99 |
| NumHerd | 287 |
| NumDaut | 1711 |
| SampCod | |

| Production | |
|---|---|
| Rel | 92 |
| PTAMilk | 683 |
| PTAFat% | 0.03 |
| PTAFat | 33 |
| PTAPtn% | 0.04 |
| PTAPtn | 30 |
| NM$ | 445 |
| CM$ | 466 |
| FM$ | 396 |
| GM$ | 438 |
| PTASCS | 2.85 |
| PL | +4.3 |
| SCEase | +6.4 |
| DCEase | +5.8 |
| SSB | +7.3 |
| DSB | +6.4 |
| DPR | +1.6 |
| HCR | +1.4 |
| CCR | +2.6 |

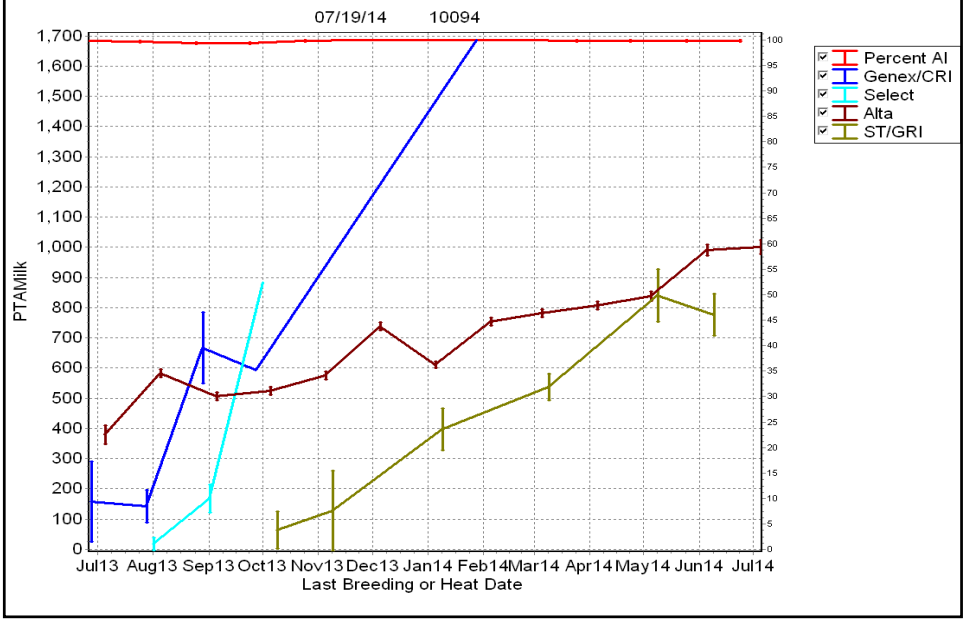
| Breed Assoc Type | |
|---|---|
| RelType | 87 |
| PTAType | 0.78 |
| PTI | 2164 |
| UddComp | +0.7 |
| RUddHt | +1.0 |
| RUddWid | +0.9 |
| UddDep | +0.8 |
| FUddAtt | +0.9 |
| TeatPla | +0.8 |
| RearLeg | +0.3 |
| FootAng | +0.6 |
| Stature | +0.6 |
| Strngth | +0.3 |
| FtLgCom | +0.7 |
| RumpAng | +0.1 |
| ThurlWi | 1 |
| | |
| DMS | |
| aAa | |

[Could look at FOR LACT=0 if you want to see what is being used on heifers]

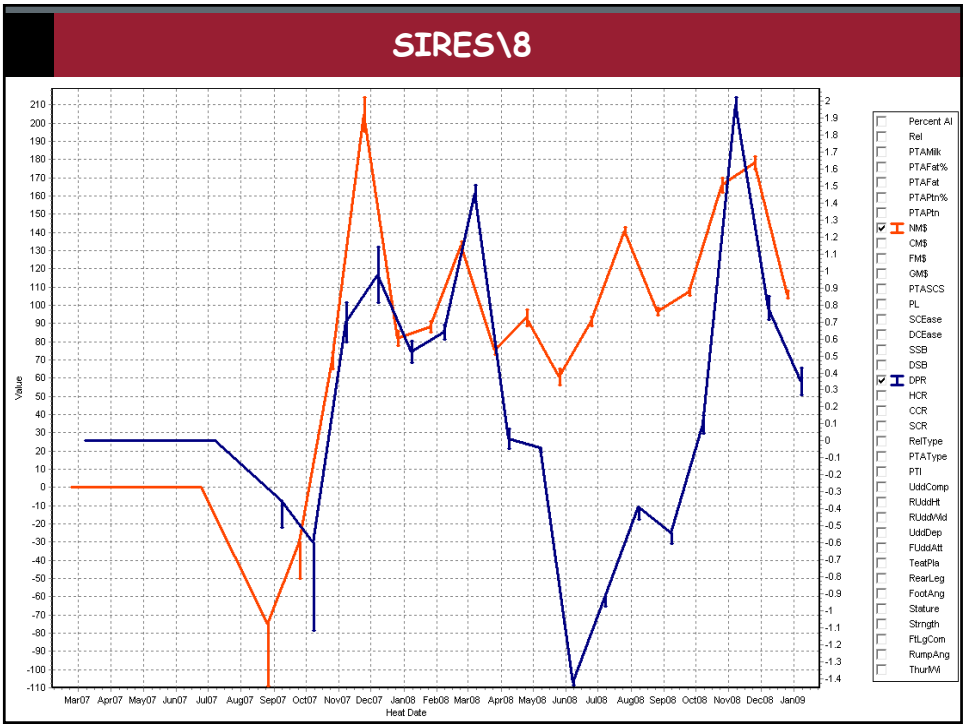
```
- Command  : SIRES\8
Count  unknown sires

   741            BULL
     8         11H80921
     1          11H4819
     1        11HJE0826
    10           11B594
     5         11H10281
     2            11H99
     1         S11JE826
     5          11B5594
     2         11H10529
    11         S11H8668
     1         SEXEDSEM
     1           11B494
     1          11H8666
     5         11H10293
     1           11HI79
     7         11H10626
     2
     1         S11H6886     +.....
    90          11H1002
```

## SIRES\8



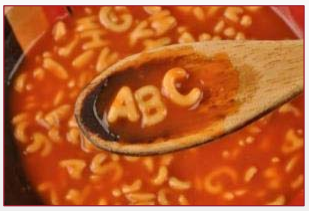

## SIRES\8



## Know your resources

## Know your abbreviations

- TPI – Total Performance Index…
- NM$
- PTA
- DPRs
- ……



http://www.holsteinfoundation.org/pdf_doc/workbooks/Gen_Sire_WKBK.pdf

## Know Your Products and their Value*

NEOGEN
Igenity Dairy Heifer Program
Igenity Basic
Igenity Elite
Igenity Prime
Igenity Select
Igenity Essential
Igenity Dairy Add-ons
*Igenity Dashboard*

ZOETIS
CLARIFIDE
CLARIFIDE Ultra
CLARIFIDE Plus / Ultra Plus
*Enlight*

Over 30 production, **health** and type traits, composite indexes, genetic conditions and haplotypes
**Wellness Trait Index™ (WT$™):* Mastitis, Lameness, Metritis, Retained placenta, Displaced abomasum, Ketosis, polled**

*Value = benefit/cost

## Example – Igenity-Elite

### Some (not all) Traits

**Key Traits**
Parentage verification
Net merit
Milk yield
Fat (lbs.)
Protein (lbs.)
Somatic cell score
Productive life (months)
Daughter pregnancy rate
Daughter calving ease*
Igenity performance index (IPI)
Grazing merit
Final score (PTAT)
Genomic future inbreeding

**Fertility Traits**
Sire calving ease*
Heifer conception rate
Cow conception rate
Daughter stillbirth*
Sire stillbirth*
Haplotype status

**Add-on content available with Igenity-Elite:**
- BVD diagnostic testing
- Causative brachyspina*
- Y SNP testing
- Causative horned/polled
- A2 beta-casein
- Causative complex vertebrae malformation (CVM)

FEBRUARY 23, 2018

**Is Genomic Testing Worth The Cost?**

BUSINESS | BY: ANNA-LISA LACA

Share Tweet +

"Genomic tests aren't right every time," explains Kent Weigel, a U of W dairy geneticist… But they'll be right seven or eight times out of 10, rather than five out of 10 with parent average."

## Work with a Team

- Breeder
- Breeding Service
- Geneticist
- Veterinarian
- +?

## Veterinary involvement

- Reproduction
- Records Analysis
- Assist with culling decisions
- Advanced Reproductive Technologies
- Health of the Herd…

## Factors that influence decisions on testing…

## The Herd Needs a Plan

- What are the herd goals?
- What are you going to do with the information?
- What is the **strategy**?
- What do you measure to see if you meet your goals?
- What do you do if you don't? What do you do if you do?

## If you decide to test or retest:

- Have a Plan when genomic testing
- Work with your veterinarian and genetics consultant
- Make sure you have good record keeping
- Measure and manage
- Re-evaluate

## Questions?

## QUIZ AND EVALUATION TIME!