Dairy Data Flow Challenges and Opportunities

Farmer Cooperatives Conference
November 6, 2015
Minneapolis, MN
Viking Model

- Hunt and Gather
- Capture
- Prepare
- Clean
- Eat
- Consume
Helmer Rabild
Research leader
1908-1924
B.S. Agr. College of Denmark
Organized DHI in Michigan, 1905

Helmer Rabild, organizer of the first U.S. dairy herd-improvement association.
Format 4 Postcard
(305-d lactation record)

BDIM – 960

Used in 1930s

Postage paid by USDA
# Cow Card - Data Storage

![Cow Card Image](image)

<table>
<thead>
<tr>
<th>SIRE NO. AND NAME</th>
<th>OWNER OF COW</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAM NO. AND NAME</td>
<td>ADDRESS</td>
</tr>
<tr>
<td></td>
<td>ASS'N</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BIRTH DATE OF COW</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>FRESHENING DATE</th>
<th>AGE</th>
<th>DAYS IN MILK</th>
<th>DAYS MILKED</th>
<th>FIRST 305 DAYS PRODUCTION</th>
<th>NO. OF RECORDS AVER'D</th>
<th>M. E. RECORD</th>
<th>DAUGHTER (NUMBER)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 TIMES</td>
<td>4 TIMES</td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>REGISTRATION AND EARTAG NO.</th>
<th>BREED</th>
<th>NAME</th>
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</thead>
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</tbody>
</table>
### Test Day Data Card

Printed by USDA – 1950s
Patented by Cornell University - 1994

<table>
<thead>
<tr>
<th>HERD OWNER CODE</th>
<th>HERD OWNER NAME</th>
<th>MILK WEIGHTS</th>
<th>BUTTERFAT</th>
<th>CONCENTRATES FED</th>
<th>CONDITIONS AFFECTING</th>
<th>BODY WGT.</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JOHN DOE</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MONTH</th>
<th>CODE</th>
<th>CODE</th>
<th>DATE AFFECTING</th>
<th>FIRST MILKING</th>
<th>SECOND MILKING</th>
<th>THIRD MILKING</th>
<th>BUTTERFAT</th>
<th>CONCENTRATES FED</th>
<th>CONDITIONS AFFECTING</th>
<th>BODY WGT.</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov</td>
<td>25</td>
<td>1600</td>
<td></td>
<td></td>
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</tbody>
</table>

### Monthly Test - Day Data for Individual Cow (DHIA10/1975)

- **Cow Index Number**
- **Month of Test**
- **Cow Number**
- **Date Affecting**
- **First Milking**
- **Second Milking**
- **Third Milking**
- **Butterfat**
- **Concentrates Fed**
- **Conditions Affecting**
- **Body Wgt.**
- **Type**

### Key Dates and Events
- **birthdate**: 1975-07-01
- **date of death**: 1975-08-01
- **date of giving birth**: 1975-10-01
- **date of calving**: 1975-11-01

### Misc.
- **misc.**: 1975-12-01

### Table Entries
- **Pounds (10ths)**: 1975-01-01
- **Percent**: 1975-02-01
- **Pounds (10ths)**: 1975-03-01
- **Conditions Affecting**: 1975-04-01
- **Body Wgt.**: 1975-05-01
- **Type**: 1975-06-01
Electric adding machines

1925
Dairy cattle have improved greatly
USDA-AIPL, Cooperative Extension, and industry partners have worked together well for 100 years
Much more progress is possible
Genomic data just beginning

USDA got out of service work to concentrate on research
Council on Dairy Cattle Breeding - Objectives

(a) To provide a **forum** in which to share information and coordinate activities that improve dairy cattle;

(b) To ensure the **integrity of data** included in the **Cooperator Database** accessed for the purposes of genetic evaluation calculations and management benchmarks by establishing quality certification standards for this purpose;

(c) To contract with a qualified organization(s) to **monitor compliance** with such standards by parties who furnish data included in the **Cooperator Database** accessed for the purpose of genetic evaluation calculations and management benchmarks; and

(d) To maintain the **Cooperator Database**, and calculate and distribute **genetic evaluations and management benchmarks**.
Dairy Records Providers
- Jay Mattison, Chair
  National DHIA
- Kent Buttars
  Rocky Mountain DHIA
- Dan Sheldon
  DairyOne

National Association of Animal Breeders
- Gordon A. Doak, Vice Chair
  NAAB
- Keith Heikes
  Genex Cooperative, Inc.
- Charles Sattler
  Select Sires, Inc.

Dairy Records Processing Centers
- John Clay, Secretary
  Dairy Records Management Systems
- Patrick Baier
  AgSource Cooperative Services
- Ted Foster
  Dairy Records Management Systems

Purebred Dairy Cattle Association
- Neal Smith, Treasurer
  AJ CA-NAJ
- Gordie Cook
  Holstein Association USA, Inc.
- John M. Meyer
  Holstein Association USA, Inc.
Non-voting Advisory Members of the CDCB Board of Directors - 2015 (1 year term)

- **Douglas Ricke**
  Zoetis

- **Juan Tricarico**
  Innovation Center for U.S. Dairy

Non-members Supporting the CDCB Board of Directors

- **George Wiggans**
  ARS-USDA Industry Liaison
  Animal Genomics and Improvement Laboratory

- **Jack Gravelle**
  CDCB Attorney
  Porter Wright Morris & Arthur LLP

- **João Dürr**
  CDCB Chief Executive Officer

- **Duane Norman**
  CDCB Technical Advisor and Industry Liaison
Non-funded Cooperative Agreement (NFCA) between the USDA-ARS-AGIL and CDCB

- **March 27th, 2013** - Signature
  - This agreement provides for the transition of the genetic and genomic evaluations from AGIL to CDCB.
  - This transition started with CDCB delivering the April 2013 official genetic evaluation results for production traits and delivering all genetic evaluations in December 2013 forward.
  - The NFCA ensures that AGIL will continue having full access to the CDCB database and performing research and development of methods, procedures and algorithms to compute estimates of genetic merit of dairy animals.

- **December 17th, 2013** - effective date of the NFCA announced by the CDCB
  - Two year countdown to CDCB being self-sufficient in
    - Computer resources
    - Staffing
    - Capacity to run the genetic evaluations, provide the dairy management benchmarks and maintain the industry cooperative database
Number of phenotypic records added to the Cooperator Database since August 2014

- Cow breedings: 29,761,246
- Heifer stillbirth records: 4,987,237
- Calving ease: 2,216,636
- Later: 2,580,948
- 1st lactation: 31,650,531
- Lactations: 21,135,349
- Stillbirth records: 17,809,324
Total males and females genotyped
Cumulative total in database, by year

- Female
- Male

Animals genotyped (1000s)

Evaluation year

- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
Four Areas

- Release and Use of Records
- Use and access of data
- Collection of Health and Fitness Trait Data
- Animal ID
- Tools and Resources for the Future
Release and Use of (Records) Data

- Needs to be current with the business environment
- Use and Access
- Recognize and address that farmers need to control the access and system acts as steward of the data
Collection of Health & Fitness Traits

- Ideas and opportunities
- A demand for this to be implemented
- USDA-APHIS-CEAH for health monitoring
- AGIL-AIP and CDCB for research
ID

- Key ID areas
  - Animal
  - Sample
  - Sample to Animal or Animal to Sample
Challenges from a National Perspective

• Relevance of herds of all sizes
  o Co-existence in the milking parlor
  o Interface with milking systems
  o Service, data, products, information
Challenges from a National Perspective

Use and access to/of data

Farmers want to know where, how, and by whom data are being used.
Decisions to be made
Thank you

- Paul VanRaden, USDA-AG IL-AIP and the staff
- João Dürr, CDCB CEO and the staff
- Dairy farmers for participating in the system for the benefit of dairy production
Thank you

- Bright future of dairy data flow synergy
- Innovation driven
- Huge potential for the benefit of dairy production and delivery of dairy protein and nutrients to feed an expanding population
- Working for and with farmers