Changes occurring in the breed composition of U.S. dairy herds

Joint Interbull ADSA Meeting - Cincinnati, OH
June 23rd, 2019
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Breed Composition of U.S. Dairy Herds

- **Pedigree based** breed composition of Dairy Herd Improvement (DHI) herds investigated from 1990-2018
- Breed – Animals’ recorded breed code (mandatory Sire ID)
  - **Crossbred** – Animals’ breed code assigned as ‘XX’ or ‘XD’
- Year – Calving year
- Breed – AY, BS, GU, HO, JE, MS, XX-XD
- All remaining breeds
Number of DHI Herds

Herds (Thousands)

Calving Year

No. of Herds

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Number of DHI Cows with Sire ID

<table>
<thead>
<tr>
<th>Calving Year</th>
<th>No. of Cows (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>2.2</td>
</tr>
<tr>
<td>1994</td>
<td>2.5</td>
</tr>
<tr>
<td>1998</td>
<td>2.7</td>
</tr>
<tr>
<td>2002</td>
<td>3.0</td>
</tr>
<tr>
<td>2006</td>
<td>3.2</td>
</tr>
<tr>
<td>2010</td>
<td>3.4</td>
</tr>
<tr>
<td>2014</td>
<td>3.6</td>
</tr>
<tr>
<td>2018</td>
<td>3.8</td>
</tr>
</tbody>
</table>

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Breed Composition of DHI Herds by Year (Scale 6.0)
Breed Composition of DHI Herds by Year (Scale 6.0)

Guernsey

Calving Year

- ≥ 1 Cow
- 10%
- 25%
- 50%
- 75%
- 90%

Percentage of Herds (%)
Breed Composition of DHI Herds by Year (Scale 6.0)

Milking Shorthorn

Calving Year

Percentage of Herds (%)


0.0 1.0 2.0 3.0 4.0 5.0 6.0

≥ 1 Cow 10% 25% 50% 75% 90%
Breed Composition of DHI Herds by Year (Scale 13.0)

All Other Breeds

<table>
<thead>
<tr>
<th>Calving Year</th>
<th>Percentage of Herds (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>2.0</td>
</tr>
<tr>
<td>1994</td>
<td>2.0</td>
</tr>
<tr>
<td>1998</td>
<td>3.0</td>
</tr>
<tr>
<td>2002</td>
<td>4.0</td>
</tr>
<tr>
<td>2006</td>
<td>5.0</td>
</tr>
<tr>
<td>2010</td>
<td>6.0</td>
</tr>
<tr>
<td>2014</td>
<td>7.0</td>
</tr>
<tr>
<td>2018</td>
<td>8.0</td>
</tr>
</tbody>
</table>

- ≥ 1 Cow
- 10%
- 25%
- 50%
- 75%
- 90%
Breed Composition of DHI Herds by Year (Scale 37.0)

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Breed Composition of DHI Herds by Year
(Scale 37.0)

Interbull Annual Meeting, Cincinnati, OH, June 22-24 2019
Breed Composition of DHI Herds by Year
(Scale 37.0)

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Breed Composition of DHI Herds
≥ 75% Threshold

≥ 75% Holstein

≥ 75% Jersey

≥ 75% Crossbred

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Breed Composition of DHI Cows
All DHI Cows
Holsteins & Jerseys

Breed Composition Holstein & Jersey (%)

Calving Year

Percentage of Animals (%)

Holstein
Jersey

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All DHI Cows of Other Breeds

Breed Composition (Excluding Holstein & Jersey) (%)

Calving Year

Ayrshire  Brown Swiss  Guernsey  Milking Shorthorn  Norwegian Red  Red & White  Crossbred

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Unknown Sires & Dams of All Cows (%)

Percentage of Animals (%)

Calving Year

UNRECORDED SIRES %

UNRECORDED DAMS %

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Unrecorded Sires & Dams of Individual Breeds in 2018

Unrecorded Parents in 2018

Breed (Cow)

Ayrshire  Brown Swiss  Guernsey  Holstein  Jersey  Milking Shorthorn  Norwegian Red  Red & White  Crossbred

Unrecorded Parents (%)

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Investigated the parents of each breed
Graphed parents (≥0.1%) in 2018
Interesting results for Norwegian Red and Red & White
Crossbred discussed in next section
Parents with same breed as progeny in 2018

% of Sires and Dams of the same breed as progeny in 2018

Breed (Progeny)

- Ayshire
- Brown Swiss
- Guernsey
- Holstein
- Jersey
- Milking Shorthorn
- Norwegian Red
- Red & White
- Crossbred

Sire & Dam of Same Breed (%)

- SIRE %
- DAMS %

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Dam Composition of Norwegian Reds’ 2018

Dam Composition of Norwegian Reds' in 2018

- **Holstein**: 50%
- **Jersey**: 25%
- **Norwegian Red**: 10%
- **All Other Breeds**: 5%

Breed (Cow)
Sire Composition of Red & Whites’ in 2018

- Holstein: 100%
- Red & White: 0%
- All Other Breeds: 0%

Breed (Cow) Sire Composition of Red & Whites' in 2018

Sire & Dam of Same Breed (%)

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Crossbred - 5.2% of Population
Crossbred Summary

2018

**Sires**
1. Holstein 51.3%
2. Jersey 33.6%
3. Montbeliarde 3.9%

**Dams**
1. Crossbred 54.6%
2. Holstein 25.8%
3. Jersey 18.0%

**Maternal Grand Sires**
1. Holstein 57.7%
2. Jersey 25.6%
3. Montbeliarde 4.8%

**Maternal Grand Dams**
1. Crossbred 60.6%
2. Holstein 34.1%
3. Jersey 2.7%
Maternal Grand Sires of Crossbreds

Sires of Crossbreds

<table>
<thead>
<tr>
<th>Sires (%)</th>
<th>Calving Year</th>
<th>% of Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holstein Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
<tr>
<td>Jersey Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
<tr>
<td>Montebiardie Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
<tr>
<td>All Other Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
</tbody>
</table>

Maternal Grand Sires ( percentage)

<table>
<thead>
<tr>
<th>Maternal Grand Sires (%)</th>
<th>Calving Year</th>
<th>% of Animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holstein Grand Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
<tr>
<td>Jersey Grand Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
<tr>
<td>Montebiardie Grand Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
<tr>
<td>All Other Grand Sires</td>
<td>1990-2017</td>
<td>80-0-0</td>
</tr>
</tbody>
</table>

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Dams of Crossbreds

Maternal Grand Dams of Crossbreds

Calving Year

% of Animals

Holstein Dams  Jersey Dams
Crossbred Dams  All Other Dams

Calving Year

% of Animals

Holstein Grand Dams  Jersey Grand Dams
Crossbred Grand Dams  All Other Grand Dams
Acknowledgements

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• Purebred breed associations for providing pedigree data
Acknowledgements

- https://www.flickr.com/photos/l_iam/4706853263 (Ayrshire cow)
- https://www.worldguernseys.com/the-current-position-of-the-guernsey-breed (Guernsey cows)
- https://culturecheesemag.com/farm-animal/brown-swiss-cows (Brown Swiss cows)
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- https://www.progressivedairy.com/topics/people/prigel-family-creamery-plays-african-serengeti (Jersey cows)
- https://www.askideas.com/cow-closeup-face-funny-picture/ (Funny cow)
THANK YOU FOR YOUR ATTENTION!

QUESTIONS?