Updated AI Sire Selection Criteria

**NM$** is a tool that can be used on dairy farms when making sire selection decisions. The genetic merit of bulls marketed through AI organizations continues to improve with each release of updated genetic evaluations. That means that the selection criteria used a year ago are outdated today. It is important that dairy producers routinely review their genetic selection criteria and know where service sires rank compared with other active AI bulls.

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Genetic improvement is a key factor in managing a profitable dairy herd. The majority of the genetic improvement in most herds is achieved through genetically superior replacement heifers. Consequently, selection criteria for service sires should be updated routinely.

**Trait Selection and Emphasis**

Genetic evaluations are calculated for a number of economically important traits. Predicted transmitting abilities (PTAs) are available for production traits (milk, fat, protein), type classification traits (final score and linear type traits), and health and fitness traits. Most of the PTAs for health and fitness traits have become available during the past 10 years. The health and fitness traits include somatic cell score, productive life, daughter pregnancy rate, calving ease and stillbirth.

To simplify the process of selecting service sires based on their genetic merit for a combination of the economically important traits, selection indexes have been developed. Several selection indexes are provided through USDA and the dairy breed associations. You can choose to use a specific selection index based on how closely the relative weights for the traits represent the importance of the traits for your herd management.

**Net Merit $ (NM$)**

NM$, which is computed by USDA, estimates lifetime profit based on incomes and expenses relevant for today’s dairy producers. The relative economic weights for fat and protein used by USDA to compute Net Merit (NM$) closely reflect the multiple component pricing that applies to Michigan dairy producers. The emphasis on the health and fitness traits is based on the relative value of reducing those particular problems in a herd.

The following traits are included in NM$:
- fat (lb)
- protein (lb)
- productive life (mo)

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Calving ability $ (CA$) is only used in NMS$ for Holsteins and Brown Swiss. Traits included in CA$ for Holsteins are service sire calving ease, daughter calving ease, service sire stillbirth, and daughter stillbirth. CA$ for Brown Swiss includes service sire calving ease and daughter calving ease only.

The relative emphasis of production traits compared to health and fitness traits in NMS$ has shifted significantly during the past decade. In fact in the current NMS$, the combined emphasis on health and fitness traits (54%) exceeds the overall emphasis on production traits (46%). When NMS was introduced in 1994, the emphasis on production traits was 74% compared to the 26% emphasis on the health and fitness traits.

Percentile Ranking

NMS is a tool that can be used on dairy farms when making sire selection decisions. The genetic merit of bulls marketed through AI organizations continues to improve with each release of updated genetic evaluations. That means that the selection criteria used a year ago are outdated today.

Table 1 lists the NMS$ values for various percentile ranking levels for each breed. Knowing where service sires rank relative to other active AI bulls is helpful in determining if the sires meet your goals. To maximize genetic improvement, it is recommended that the service sires in your herd average at or above the 80th percentile.

Schedule for New Genetic Evaluations

Updated genetic evaluations have been released in the dairy industry four times per year for the past decade. A change was made in 2007 to provide updated genetic evaluations just three times per year. For this transition year, the genetic update schedule was February, May and August.

In 2008, the genetic updates will be released in January, April and August.

Summary

To ensure that a herd’s replacement heifers will be genetically superior, sire selection criteria should be reviewed and updated periodically. Net Merit $ can be used as a key selection tool to identify high ranking service sires. Use the percentile ranking table in this article to determine where your current group of service sires rank.

Reference


### Table 1. NMS Levels of Top Percentiles for AI Sires by Breed. August 2007 USDA Sire Summary.

<table>
<thead>
<tr>
<th>Breed</th>
<th>Percentile</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>85</th>
<th>90</th>
<th>95</th>
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<td>162</td>
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<td>352</td>
<td>381</td>
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</tbody>
</table>

1 Number of bulls in the current active AI population for each breed are in parentheses.