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Implications

Producer satisfaction level with dairy cattle reproduction was dependent on reported annual 21-day pregnancy rate; however, the use of genomic testing was independent of reported pregnancy rate.

Introduction

Maternal fertility is a lowly heritable polygenic trait. Our collaborative group has embarked on a 5-year research and extension project to develop novel genetic fertility markers in heifers and lactating cows, determine effects of single nucleotide polymorphisms on daughter pregnancy rate and embryo development, and understand gene pathways associated with daughter pregnancy rate, fertilization and embryo development. The objective of the survey was to examine current producer opinions, awareness, and management strategies regarding genomics to provide a foundation for the extension component of the project.

Material and methods

Between 6 August 2013 and 5 February 2014, United States' dairy producers were encouraged to complete the on-line survey through electronic methods including newsletters and websites (Dairy Alert, Dairy Agenda Today, Dairy Business Communications, Hoard's Dairyman), state newsletters (California, Utah, Idaho, Washington, New Mexico, Virginia, and Florida), and via magazines (Progressive Dairyman, Western Dairy Business). Frequencies were tabulated for binary and categorical variables (Caraviello et al., 2006). Chi-square analyses were performed using MiniTab.

Results

Dairy producers submitted 334 surveys. Nearly all producers (99%) remarked they had read articles and seen advertisements regarding genomic testing, while 67% mentioned the use of genomic testing in their herd. The most prevalent reasons, in descending order of importance, for use of genomic testing were to 1) aid in the selection of genetically superior animals for internal use or marketing, 2) verify parentage, 3) aid in the decision-making process in mating heifers, and 4) aid in the decision-making process to "cull" or "keep" heifers. Among respondents who had not used genomic testing, 63% remarked they had considered genomic testing. Satisfaction level with reproduction was dependent on reported annual 21-day pregnancy rate (Chi-Sq = 38.9; $P < 0.05$; Table 1). The use of genomic testing was independent of reported pregnancy rate (Chi-Sq = 3.1; $P > 0.05$; Table 2). Annual average 21-d pregnancy rate for lactating cows in the U.S. is 14 – 18% (Niles et al., 2001; Moeller et al., 2010).

Table 1 Satisfaction level with reproduction relative to annual 21-day pregnancy rates for lactating cows

21-day pregnancy rate	No	% of row total	Yes	% of row total	Count	Total
Equal to or less than 15%	13	77	4	23		17
16 - 18%	48	68	23	32		71
19 - 21%	41	41	58	59		99
Equal to or greater than 22%	38	28	100	72		138

1325 respondents answered both questions

Table 2 Use of genomic testing relative to annual 21-day pregnancy rates for lactating cows

21-day pregnancy rate	No	% of row total	Yes	% of row total	Count	Total
Equal to or less than 15%	8	47	9	53		17
16 - 18%	19	27	52	73		71
19 - 21%	31	31	68	69		99
Equal to or greater than 22%	48	35	90	65		138

1325 respondents answered both questions

Conclusions

The use of genomic testing appears to be independent of reported pregnancy rate. Table 2 provides evidence that United States' dairy producers, across a spectrum of reported annual 21-day pregnancy rates, have used genomic testing. A key challenge identified in this survey is to develop a broad-based extension program capable of providing 1) decision-making tools to encourage producers who have considered, but not yet used genomic testing to do so, and 2) advanced support to further enhance the use of genomic testing among those already using the technology.

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References

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