Making data work on the farm

The integration of data is a relatively new process and flexibility is required when incorporating new features.

by the “Dairy Brain” team at the University of Wisconsin-Madison

The University of Wisconsin-Madison Dairy Brain’s team is committed to developing data-integrated, data-driven, time-sensitive decision support tools (DST) that disseminate research and help improve the performance of dairy cattle production systems. This collective system is designed to integrate and harmonize data from both on- and off-farm sources, apply cutting edge research analytics, and return information to the farmer in an easy-to-use interface. This effort will save valuable time, provide new insights, and improve the dairy’s performance.

However, the fact that these tools will be visually appealing, based on state-of-the-art scientific knowledge, and reliant on the latest computing technologies does not guarantee they will be adopted, remain useful, or even endure relevancy throughout time. Experience indicates that the scientific community has not been effective in promoting the adoption of such tools.

Three steps forward

The Dairy Brain project has gathered input from across a range of potential users and has identified and looks to implement three key types of analyses that will be valuable:

Descriptive analytics — Similar to key performance indicators (KPIs), this analysis can include measures such as milk yield, feed efficiency, or income over feed cost. Such metrics can also be presented in the context of historical data for benchmarking purposes.

Predictive analytics — The use of methods such as regression and machine learning to predict future conditions, such as a disease occurrence like ketosis and mastitis or productivity. These predictions allow the farmer to evaluate different scenarios to compare potential outcomes of different management decisions.

Prescriptive analytics — The incorporation of descriptive and predictive analytics. This could include grouping of cows based on nutritional requirements, the best long-term breeding strategy, or suggesting culling decisions based on current and potential herd composition.

Challenges exist

Farmers will hesitate to use a new tool unless it is easy-to-use, practical, and can add significant value to farm operations. While these tools have the potential to provide new and valuable insights, their implementation will likely require a farm to adopt new and more stringent data collection format and standards.

Current standard methods have limited adoption due to inadequate training at all user levels and too much freedom in data entry as discussed in the article “Best practices in data collection and communication” on page 218 of the April 10, 2020, issue of Hoard’s Dairyman. Although some standard methods exist such as health event recordings, these guidelines as outlined by the American Association of Bovine Practitioners (AABP) are not typically followed, and well-designed tutorials with detailed standards for different users’ levels are not always available.

Possible solutions to overcome hurdles are multifactorial. In order for the tools to be effective, it is critical that the data collection and recording is standardized both within and between farms, so that the data can be effectively integrated in the analysis chain. After looking at existing protocols from groups like the International Committee on Animal Recording (ICAR), www.icar.org; AABP, www.aabp.org; or the National Mastitis Council (NMC), www.nmconline.org, additional protocols should be developed to ensure consistency of data recording.

It is critical to include farmers and farm consultants in this process to ensure the communi-