DHIA view of research priorities – Bruce Dokkebakken and Dan Sheldon

Bruce Dokkebakken

Johne's disease

1. It nasty, lurking for years before it strikes
2. NAHMS says 25% of dairies have confirmed they have Johne's present, and most estimates put the incidence much higher.
3. There is no great test for it – the ELISA tests we commonly use catch only about 50% of infected animals because of intermittent shedding, and fecal culture is not much better. The tests are fine, but the organism or antibodies are hiding from us on sample day (serum, manure, or milk). In the past, everybody got serum drawn to test the same day – that has changed with milk. We now have the opportunity to efficiently sample and test cows based on selected criteria on monthly sample days.
4. It's an animal health issue that we hope does not become a human health one, but it impacts the profit and the fun of dairying
5. DHIA is now testing well over 200,000 cows a year using the milk ELISA test.
6. Results are going back to producers and to state animal health officials.
7. Putting that data into the USDA database may help us:
    a. Put an economic impact on the disease.
    b. Find a genetic component.
    c. Get smarter about when to test a cow for Johne's, enabling us to catch more positive cows – maybe we need to look at persistency or MUN or some other data as triggers since we can selectively sample cows throughout the lactation (University of Minnesota study is preliminary look).

What else is in the milk?

Many of our labs use the full infra-red (IR) spectrum to analyze milk. What else can we teach IR to find since we are running the sample anyway? Fat, true protein, lactose, MUN, other solids, solids-not-fat, total solids, casein, and free fatty acids (FFA), unsaturated fatty acid, monounsaturated fatty acid, polyunsaturated fatty acid, and saturated fatty acid are all there now.

What new analyses or undiscovered relationships between analyses (like fat protein ratio) await us using IR or ELISA?

We have gone to the work of identifying the cow and the sample, and finding more to test for keeps us going back to the farm and data flowing where you want it to.

Most farms are fine with sending data off for research, but that is not the reason they want it collected. Management information and benefits drive data collection. If we want more data, we need to offer more benefits.

What analyses can be developed that impact shelf life, flavor, human health?

How far away is using milk for DNA?

The less needles we stick in cows the happier the consumer will be, and the same can be said for on farm labor and maybe even the animal.

Analyzing milk is the easy answer.

Bruce Dokkebakken (cont.)

Robotic milking

1. Interest in and installation of robots is on the increase in many parts of the U.S.
2. Capturing milk production data is probably not a problem.
3. Efficiently providing component data may be a challenge.
   a. Sample all milkings in 24 hours, test all samples (happy labs), and mathematically create the values for components?
   b. Option of pooling samples prior to analysis will need to be carefully done and even then will never result in an aliquot (representative) sample.
   c. Capture milking times which are available, and adjust components from one milking to 24 hours based on times. There are no factors for short and irregular intervals. Will we need to adjust SCC and MUN as well as butterfat?
4. This ties into AP factor research going on now – components are the issue in some herds, but not in most, due to management style. If we can figure out how to sample more efficiently from robots, that can translate to the AP herds as well. We really need herd level AP factors, especially for components.

Statistical process controls

We generate a lot of paper and a lot of numbers. No customer is crazy enough to look at it all – they just look at their favorite stuff. What if we could offer them the chance to just look at the stuff that is significant, that is current? Would that be useful to keep those large dairies we all worry about in the system? The transition cow measures in use now begin to address this need.

Other Priorities

1. There is great data coming out of USDA – where does it go? We need to feed back the information. Do different sires cause different gestation length? If so, feed that back to DRPCs so that reports can list more accurate "to calve" dates and enabling desired dry periods. Seeing a benefit like this might even motivate a few more folks to list the NAAB code at breeding instead of the sire short name, and that will improve calving ease data, fertility data, and sire ID.
2. Provide benchmarking – we provided a calf liveability report and the first comment was "this is interesting – how am I doing compared to everyone else."
3. Crossbreeding (is this genetic diversity?).
4. Research by breed (do third or later Jersey lactations more dramatically increase in SCC than other breeds?).
5. Conception rate on gender-selected semen.
6. Gather milking duration and other parlor management data for summary and analysis.
7. On-farm management uses for genomics.
8. Improve early mature-equivalents and lactation-persistency numbers.

Dan Sheldon

Summarized by S.M. Hubbard, AIPL

- Education related to economic impact of research
- Benchmark statistics
- Herd management information
- More frequent (<100 years) information conferences

Audience discussion

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- Finding sources and support for collecting additional data