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 Dairy Production Centre of Expertise
 Quebec-Atlantic

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The Transition Cow Index™: a tool to measure your success

An exclusive new tool will soon be available to help dairy producers improve their transition management

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How effectively do you manage the transition period? Have you even given any thought to the question? Too often, we find ourselves doing damage control in times of crisis, after having failed to notice that a few cows were suffering from displaced abomasum, milk fever, or weren't producing — or maybe all of the above. Outside of those disasters, however, the simple fact that the cows are staying healthy is often enough for us to consider the transition a success.

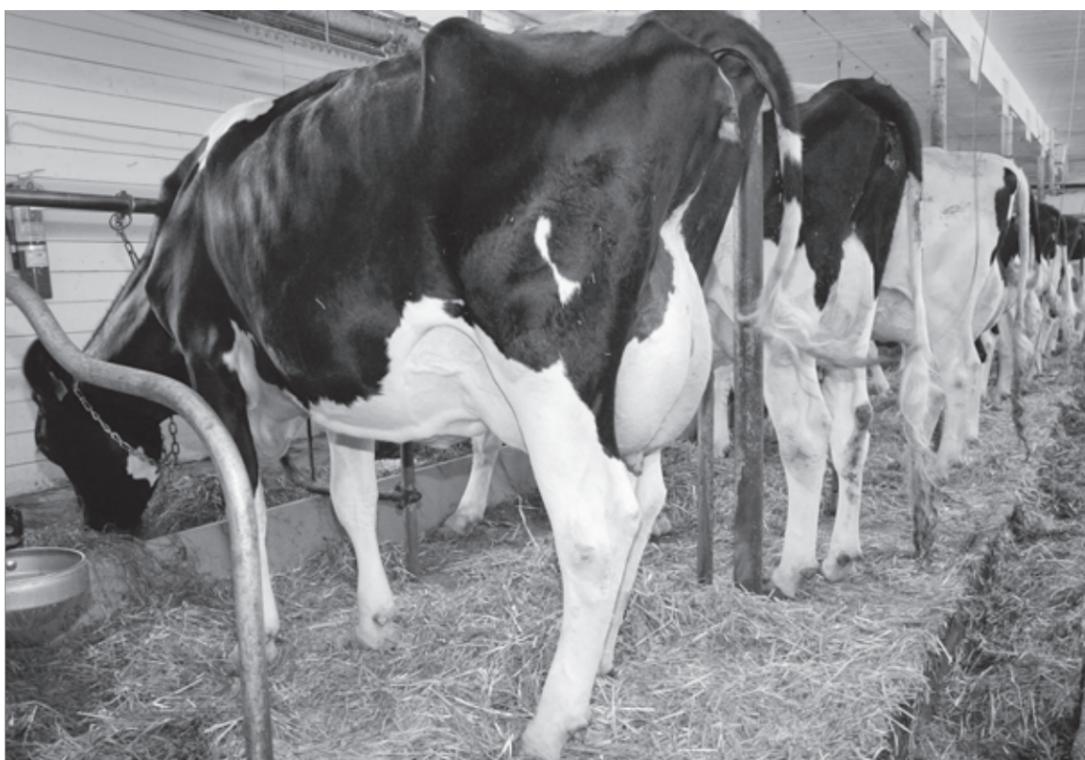
It is true that, until now, it wasn't easy to quantify the success of the transition phase. In the future, however, Valacta's clients will have access to a unique tool designed specifically to answer that need. In accordance with the license obtained by Valacta, the Transition Cow Index™ (TCI), developed by Dr. Ken Nordlund, from the University of Wisconsin, can now be calculated for herds in Quebec and the Atlantic provinces.

Dr. Nordlund designed the tool based on the premise that milk yield on the first test of a lactation is a precise and reliable indicator of a successful transition. It's quite obvious, however, that the amount of milk produced is subject to far too many causes of variation to adequately

reflect cow health during the transition period. That's why the TCI™ calculation also takes into account more than a dozen other factors to compare the first test milk yield to the expected milk yield for each cow. Among others, the cow's last lactation's milk production, age, number of lactations, number of days dry, and previous lactation's last test somatic cell count are taken into consideration to predict milk production for the current lactation.

The TCI is calculated as the difference between the first test projection and the prediction based on historical factors. A negative TCI value, obtained when the first test projection is lower than expected production, indicates that the cow is not starting lactation as anticipated and it's likely that transition has something to do with it. That means that each cow is compared with herself rather than with a standard value for a particular population. For example, if, based on past records, we expect a cow to produce 10,000 kg during her current lactation, but projected production at her first test date is only 9,000 kg, that cow will have a TCI of -1,000 kg, which suggests the transition period didn't go as well as it could have. Conversely, if her first test projection is 12,000 kg, her TCI will be +2,000 kg, indicating that, on the whole, the transition period was a success.

The equation for the Transition Cow Index was developed using



data from a half-million cows in 4,000 herds. Since production from the previous lactation is a parameter in the calculation, a TCI cannot be calculated for first-lactation heifers. Retrospective validation studies have shown that an increase in the TCI has a positive effect on subsequent production. In fact, milk production during lactation is found to increase by 1.27 kg for every one-point increase in the TCI. That means that a cow with a TCI of +1,000 kg will produce 1,270 kg more on average than a cow with a TCI of 0. This further demonstrates the importance of the transition period in relation with productivity.

The TCI has also been shown to be an excellent indicator of a cow's chances of survival to the next lactation. As you can see on the graph below, a cow with a TCI of 0 has about a two-in-three chance of calving again, which roughly corresponds to the average culling rate. By comparison, a cow that has gone through a difficult transition period and has a TCI of -5,000 has only a one-in-three chance of remaining in the herd until the next lactation. Conversely, a cow that has an easy transition and gets off to a roaring start with a TCI of +5,000 has an excellent chance of coming back for a subsequent lactation. The number of cows that leave the herd before 60 days in milk is another indicator of the success or failure of the transition period. And the trend is exactly the same when we look at the relationship between the TCI and survival to 60 days in milk.

The transition phase is also critical with regard to health problems. It is estimated that three out of four health problems occur during the first 30 days after calving. As mentioned earlier, we might even be tempted to use the disease rate as a barometer for monitoring transition management. Although such information is extremely useful, it is not precise enough to provide an accurate evaluation of the transition period. Since the prevalence of health problems is, fortunately, relatively low, it is difficult to detect differences in frequency and to associate them with transition. The TCI, on the other hand, provides an accurate

picture of health problems in early lactation. In fact, a retrospective comparison of the TCI of cows that experienced health problems related to calving with that of cows that remained healthy showed that the TCI is very sensitive to health problems. Indeed, a difference of over 1,200 kg was observed between healthy cows and those diagnosed with ketosis. For cows that suffered displaced abomasum, the gap widened to more than 2,000 kg.

Although the Transition Cow Index doesn't tell us what's causing the problem, it does ensure rapid detection. The TCI is actually the most sensitive and reliable tool available to quickly identify a problem related to the transition period. It also gives us a means of evaluating the effectiveness of our corrective actions or changes made to transition management practices, whether a feeding adjustment or improved comfort.

The Transition Cow Index will therefore be the central element of Valacta's new, exclusive reports that are intended to serve as a sort of instrument panel for the transition period. The key elements of this panel are the TCI, the protein-to-fat ratio of cows in early lactation (as an index of the risk of sub-clinical ketosis), the number of cows culled before 60 days in milk as well as cows with a first test cell count over 200,000.

With an instrument panel like this, you will now have better control of the transition period. This new tool will be available in the course of April 2010.

Chances of survival to 60 days and of calving again based on the Transition Cow Index

