# Use of the Transition Cow Index™ as a Monitor of Herd Health

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## Transition Period

- Period 3 weeks before and after calving
- Area of increased focus in studies of dairy herd management
- End of pregnancy and beginning of new lactation
- Period of tremendous hormonal and metabolic changes
- Also associated with the majority of disease events in a dairy cow's life

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## Milk Production Measures of Herd Transition Programs

- Examples:
  - First Test Mature Equivalent Projection
  - Peak Milk Production
- Based on averages of cows calving in a short period of time
- Easily skewed by clusters of superior or inferior cows calving in a similar period

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## Health Records would appear to be obvious monitor, but….

- Diseases are variable and confounded
- Case-definition and diagnosis varies between people
  - Training, experience, variation in work-load, etc…
- Health records require constancy and diligence over time but are frequently inconsistent
- Most health events are recorded in on-farm software – less frequently submitted to databases
- Potential public accessibility of health trait and treatment data through a government database is an emerging concern to producers.

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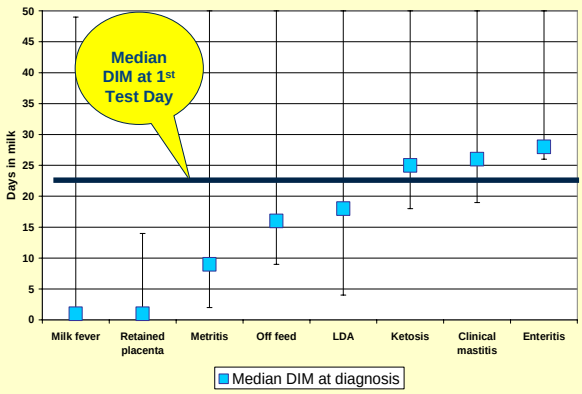
**Onset of common dairy cow diseases**




*Modified from Østergaard & Gröhn. 1999. JDS 82:1188*

## The "Transition Cow Index" (TCI ™)

- Developed by researchers at the University of Wisconsin School of Veterinary Medicine
- AgSource data from 2001-2002 for approximately 500,000 cows
- Matched herds with Monsanto's database of rBST purchase patterns
- Yield of over 4,000 herds matched
- Measured against on-farm health records recorded on *Dairy Comp 305*

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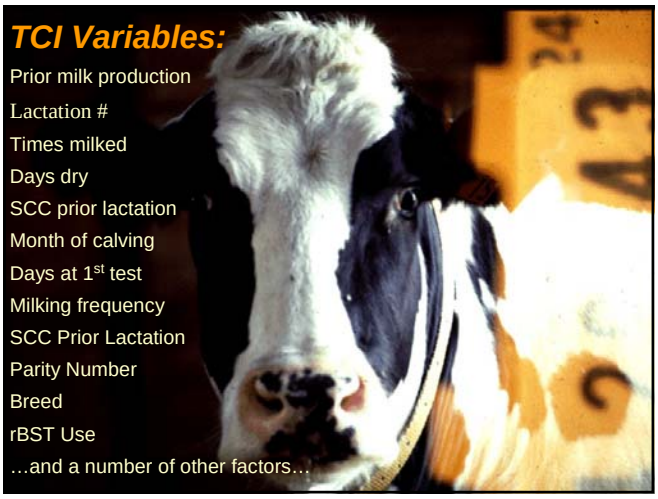
## *TCI Variables:*



Prior milk production
Lactation #
Times milked
Days dry
SCC prior lactation
Month of calving
Days at 1st test
Milking frequency
SCC Prior Lactation
Parity Number
Breed
rBST Use
…and a number of other factors…

## TCI is Based on Individual Cows

- Each cow serves as her own control – her expected performance based on previous lactation
- High TCI levels do not reflect the best cows, but rather the best transition programs
- Dairy operators with average cows can achieve positive TCI levels
- Some high production herds have poor (and expensive) transitions, but achieve high production through high peaks and persistency

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## Two cows –

**similar performance and expectations**


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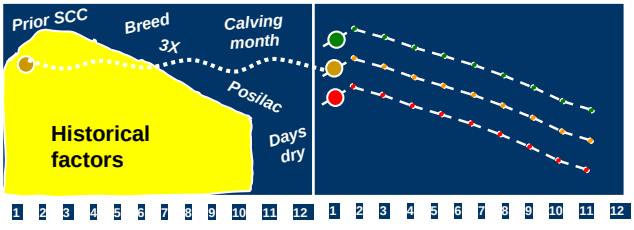
## Variation from Prediction = TCI

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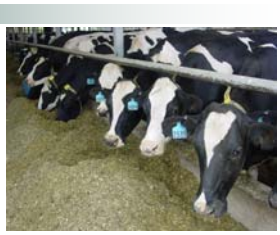
## TCI Simplified…



- TCI takes a cow's ending 305 day production from the previous lactation
- Ending 305 is adjusted using TCI variables to predict "Expected Production" for next lactation

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## And Then…

- The cow freshens, the first test (5-40 DIM) is recorded and a “Projected Production” for that lactation is calculated
- Projected Production *minus* Expected Production *equals* her Transition Cow Index
- The cumulative value of all individual TCI’s for cows calving within a defined period allows herd trends in transition cow management to be measured

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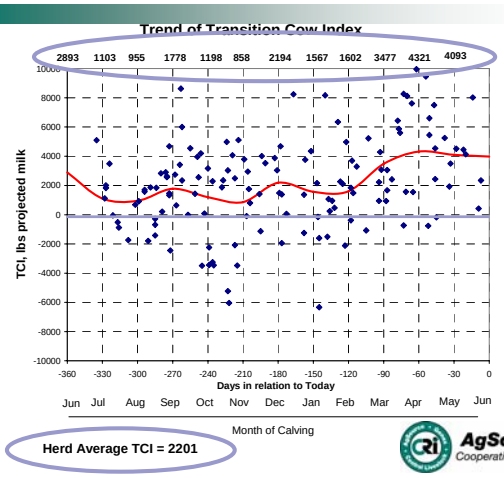


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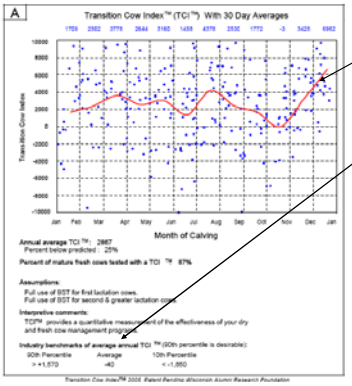
## What TCI Can Tell You…




Identifies the trend in fresh cow performance

Compares fresh cow performance to industry benchmarks

Summarizes the net effects of preventative programs and disease management at the herd level

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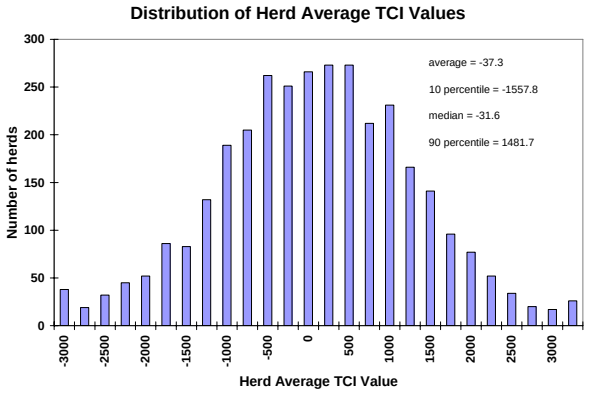
## TCI Validation




## Validation as Health Monitor?

- Secured *DairyComp 305* records for 18,814 cows
- Identified date of diagnosis of selected diseases relative to first test date
- Compared cows with disease events to cows without noted disease

## Specific disease events and TCI™ (kg)

| Event | TCI™ | Std. error |
|---|---|---|
| None | + 62 | 39 |
| Metritis | -245 | 274 |
| Ketosis | -1,117 | 244 |
| Lame | -1,286 | 298 |
| Displ. Abomasum | -1,734 | 155 |
| Off-feed | -2,746 | 468 |

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## SCC Linear Score

- 163,624 AgSource records were sorted by first test SCC linear score
- Each unit of SCC linear score was associated with a loss of 198 kg. TCI
- Very close to the -180 kg. Milk loss reported by Shook in 1982.

## Opportunity for Milk Recording Organizations

- Immediate added value to dairy producers from milk recording services
- Reinforced benefit of central database to large, commercial herds using on-farm programs
- Time not required to produce historical trends
  - Not reliant upon accumulation of new data – basic information already available in historical databases
- Does not require additional component testing (e.g. MUN) – very cost-effective

## TCI Packaged with Other Data

- A featured element of the AgSource "Fresh Cow Summary" released in January
  - Ratio of First Test Fat/Protein %
  - Udder Infection Summary
  - Cows Leaving Herd at <60 DIM
- "Fresh Cow List" with individual TCI's released this month.

## Summary

- Transition period is a new management focus with significant impact on herd performance
- Milk production measures and specific measurements of health traits have some fundamental limitations, even in the best circumstances
- TCI is a step forward in focusing not on the source of problems, but rather the end result of cow health – her own production

## Summary

- TCI can be used to benchmark and monitor transition cow programs
- Many early adapters feel TCI has potential be to transition cow programs what SCC is to mastitis control
- TCI adds value to milk recording services from data already available.

## Can Milk Production be used as a measure of cow health?

- ***Yes!***
- Can also serve as a more efficient mechanism of measurement.

For More Information:

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**Thank you!**