

Dairy Diagnostics

Practical Dairy Farm Management

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Background

- Schultz Dairy Farm
- Taylor, Wis. (Jackson County)
- Purchased 1984
- All crops used on farm
 - 1,250 tillable acres (750 owned, 500 rented)
 - Required acreage for manure management

Schultz Farmstead



Background

- Converted to double-5 herringbone (1994)
 - Later converted to double-6 parlor
- Now milking with 8 Lely A-3 robots (2009)
 - 540 milking cows
 - 1,050 total head
- CAFO - Natural Resources 243 (WI DNR)
 - Concentrated Animal Feeding Operation
 - Greater than 1,000 animal units
 - Equal to 715 cows @ 1,400 pounds each

Robotic Barn



- Research 2007, construction 2009
- 8 robots, 60 cows per pen

Electrical

- 225 kVA transformer
- 200 kW standby generator
- Robots, fans and other major loads are 3-phase, 277/480 volt
- Step-down transformer for 120/208 volt loads



Energy Efficient Equipment

- VFD vacuum, milk, and water pumps
- Milk cooling
 - Plate cooler
 - Scroll refrigeration compressors
- Robots use less hot water than parlors
 - High energy factor water heaters
 - Heat recovery unit
- High efficiency vent fans with controller
- Lighting systems are efficient
- Low energy livestock waterers

Insulation / Tunnel Ventilation



Feed, Water & Waste Management



Robotic Milking with Lely A3's



What Can Robots Do Besides Milk Cows?

- Track production by herd and by cow
- Track quality by quarter
- Track cow weight
 - Digestive system is a 55 gallon drum
 - Weight can vary 100 to 200 pounds per day



What Can Robots Do Besides Milk Cows?

- Track feed intake by COW
 - Body score control
 - PMR instead of TMR
- Track rumination by cow and herd
- Activity/heat detection



Robotic Negatives

- Need technically inclined people to operate
- Requires daily maintenance
 - Robot down time (>1-hour) is milk lost
- Sensitive to sub-freezing temperatures
- Herd expansion requires more robots
 - One robot can handle about 60 cows or 5,500 lbs./day

Things I Would Change

- Free flow but control traffic
 - Fetch pen
- Multiple robots for each pen
 - Provides back-up during breakdowns
- Robot location
 - Outside vs. center location
- Shorter feed augers
 - Feed quality



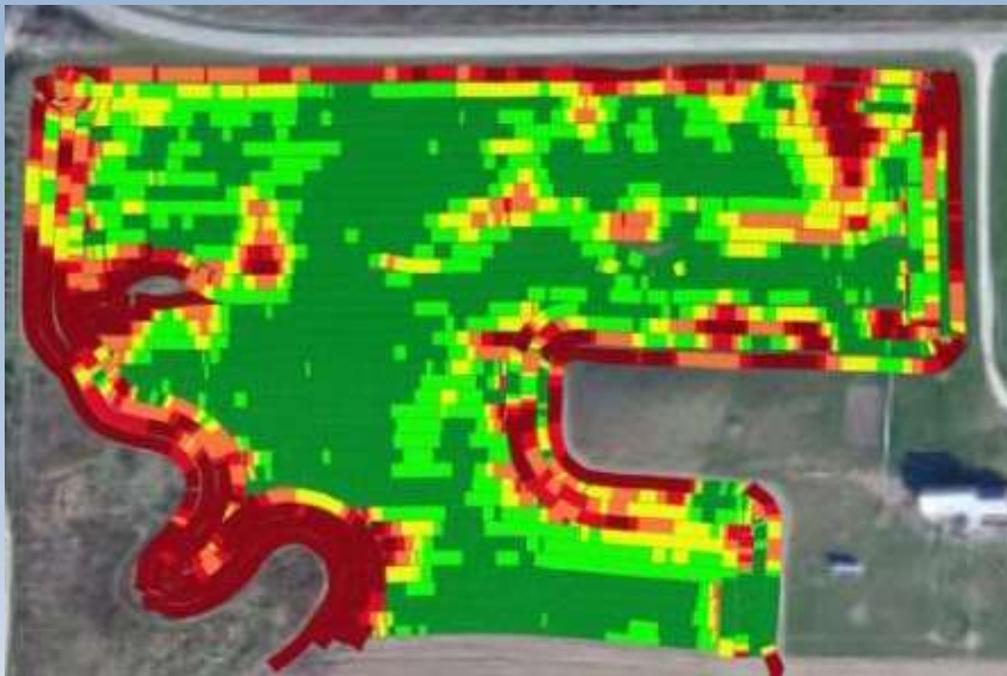
Iowa Dairy Foundation
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Dan's Mobile Office

- Waste and nutrient management
 - Impacts feed and water quality
 - Application rates
 - Rainfall and leaching
 - Historical data
- Crop production
 - Yield potential
 - Variable population
 - Multiple varieties
 - Weed control



Yield Map



Practical Dairy Farm Management

- Technology is impacting all aspects of our lives including dairy farming
- Robotic milking
 - I envisioned robots as the answer to quality milking, but am finding that addressing labor concerns may overshadow the other benefits robots have to offer
 - Requires skilled labor (tech savvy)
 - Turnover can be a problem
- Nutrient/crop management for large dairies requires new tools and skill sets

Questions?