Welcome to the Open House!

O.A. Borden & Sons, 2841 Valley Falls Road, Schaghticoke, NY 12154
518-692-2370  www.bordensorchard.com

Originally begun in 1837, this diversified farm is operated by the sixth and seventh generation of Bordens, descendants of Smith Borden.

The farm covers more than 775 acres of land for field crops, buildings and fruit production. Consisting of a fruit orchard growing more than 25 different apple varieties as well as pears, plums and peaches and a dairy farm, the Bordens function with both a seasonal retail focus and year-round milk sales to Stewart’s.

The dairy of 200 cows and 160 heifers and calves was an early adopter of rotary parlor technology in 1976 when the farm upgraded from a bedded pack barn. The efficiency of the rotary parlor was very appealing to the new generation of family labor and operators. They had started with a walk-through parlor in 1950’s and built a herringbone in 1969.

Now more than 40 years later and after much research on new dairy technologies, the farm has again leaped forward with new technology and invested in building an automated milking system facility or “robotic” milking center for 112 cows.

The substantial investment is designed to remove some of the physical labor needs in the actual milking event and utilize equipment for actually attracting, cleaning, attaching and milking the cows. The two Lely units are milking each cow an average of 3.3 times per day which is more than the 2 daily milkings the farm was performing on their own. This has helped to increase milk production on the automated cows by 10 pounds/day.

Besides the physical action of milking, the milking units also have the ability to track numerous pieces of information which can help to manage cow health in the herd: milk temperature, milk conductivity, color, weight of milk produced, time and length of milking, difference in production from last milking.

For any point which appears to be out of the ordinary, a warning alert can be generated to notify the farmer of a problem. These alerts may just be daily email-type statements on a report or the robot unit is designed to call the farmer’s phone and notify them when there is a problem. These may involve not being able to attach a milking unit with repeated attempts, something is broken or the computer perceives a malfunction.

A special thanks would like to be extended to everyone that helped with this project, including but not limited to: Chad Snook, Scott Matuski, Sam Cottrell, Matt Cannon, Bill Martin, Sue Whitney, The Lely Crew, Will Linendol, Randy Wheeler, The Jansens, Jim Ball, Mallory Perkins, Eireann Collins, Stewarts, Rella Getty, Cathy Wickswat, George Allen, Aaron Allen, Travis Allen, Eric Allen, Ethan Allen, Jay Hayes, Craig Burns, Elizabeth Miller, and the many Farmers we visited with that shared their experiences and ideas.

Thank You.

The Borden Family
Robot Barn Info

* 104 milking stalls; overstocked 7%
* 2 catch areas with drop pit stalls
* Design is free-flow system for cow choice
* Insulated roof-1” insulation
* Laminated trusses—no bird roosts
* Laminated 6x6” posts- treated bottoms
* Automatic curtain on walls; curtained roof opening
* Headlocks & weighted swing gates
* Alley scrapers
* Stalls are front hanging with open lunge space
* Bedded with sawdust & paperfiber on mattresses 1-2x/wk
* Built-in foot baths with radiant heat in floor.
* Weather test @ -25 degrees outside; barn was 35 deg.
* Orientation is North-South.
* Manure is gravity flow to clay-lined lagoon.
* Electric bill is lower in robot barn for 110 cows compared with regular barn with 85 cows. However, propane heat for robots makes up difference.
* Robots don’t need health insurance, vacation time, sick days, and pensions, though they can break and must be trained and maintained.

Cow Management Info

Cow udders are flamed to remove hair.
Cows fed 3x/day – mixer wagon too small.
Push-up robot ‘Juno’ cycles 1x/hr over 24 hrs.
Juno self-charges, beeps on rounds to alert cows.
Cows do not enter the barn until cleared by withhold time and CMT paddle after freshening.
Last check is 8:30 p.m. to make sure curtains, robots, Juno and cows are operating.
Run a foot bath at least 1x/week
Always training new cows – some need no help.
Robot waiting – cows recognize sound of finish, move to line.
Milking speed and udder conformation are key traits to breed for.
Purchased grain $100/day extra cost; milk income gain $500/day.

Robot Info—on 3/14/14

2 Lely Astronauts A4s
Cows milked 3.3 x/day
Production 80.1 lbs/cow/day
Top producer 150 lbs/day
Robot/lbs/day goal is 5000
Avg cow visits/day 3.3
Avg refusal visits/cow/day 1.5
Avg failure/cow/day 0.9
Peroxide based pre-dip on brushes
Separate iodine based post dip spray
Avg grain fed 13 lbs/cow/day (6-20 range)
Robot milks 23 hrs/day – goal is 10% free time
Cleaning cycles 3x/day – 2 alkaline wash, 1 acid
Change filter 3x/day
Tankless water heater preheats for robot.
Robot heats water to 210 deg. for wash cycle.
Robot calls when it perceives a problem – i.e. cannot connect unit, idle for more than 20 minutes,

People Management

Daily stall management maintains cow beds
Daily Alert management must look at records and cows.
Farm person works in or checks barn 3x/day.
Robot equipment is washed 2x/day
Mixer wagon goes through barn 3x/day.
Only time cows are moved is bedding day.
Rule: NEVER do anything unpleasant to cow in robot!

Equipment added

2 Lely Astronaut A4s and computer units
Central processing unit 180’ of milkline
Buffer tank Alley scrapers
Bulk tank Juno feed push-up unit
2 grain bins with automated systems
ID collars for all cows
Farm Statistics
- 775-acre diversified farm business consisting of a 200-cow dairy and 18 acre apple orchard.
- There are four families supported

Reasons for pursuing robots
- Needed to do something: aging parlor and facility
- Minimize labor expense
- Tight land availability for adding on a lot more cows
- Desire to continue diversified business
- Enjoy a new challenge

Results
- Increase in milk production
  - Better cow comfort and increased milk frequency
  - Modest decrease in hours spent milking
  - Calmer, more pleasant cows
  - Better flexibility in our working hours
  - Still milking a herd twice a day in the parlor
  - Increased number of cows being milked without increasing labor
  - Better milk quality
  - The Balance Sheet looks very different
  - Barn design achieved all of our major goals: Simple, expandable, similar to what we already had and knew would work, while improving cow comfort and robot efficiency.
  - Roof insulation and peak curtain have proven to be valuable investments so far
  - Gravity flow manure system has worked well

Things that could have been done differently:
- Footbaths did not need to be built in
- Catch areas are currently oversized and underused. Expect that to be better after expansion
- Charger for feed pusher placed at end of path rather than beginning
- Would have started breeding cows earlier for better rear teat placement

Justification

We overbuilt at a cost of just over $1 million for expansion in the future. So catch areas, robot central units, manure lagoon, alley scrapers, feed pusher, etc. will all be able to be used for the additional cows. We projected this project would break even if the cows we owned would average 75 lbs per cow in the robots and 65 lbs in the parlor, milking 200 cows at $18 milk. Our current production is 78 lbs average in the robots and 65 in the parlor, and the milk price is higher. With better feed, I'm sure we'd do better.

As a side note I wasn't necessarily thinking this was going to be a profitable move on year one, but the cows have done enough better than we thought that we're at least in the black, and part of making this pay going forward was adding on more cows, which we have yet to do. I'm not going to say that we're getting rich, but it's certainly not been as bad as it could have been.

It is important to do your research and listen to both the farmers who have the units, the company and to watch the cows.
Teaching the Cows

One question that a number of people have been asking is how do the cows learn to go into the robots. Mike and Tom explained to us that in order to start the cows they walked the cows over to the barn to “practice” going in the robot and getting a grain snack for a couple of days. After the first round, the robot then did a training set-up where the arm moved and made noise but didn’t actually milk the cow while she was eating her treat.

The initial days still required loading cows into the robots. And there are new cows that need training to teach them to enter. But many, especially the inquisitive ones, catch on to the grain treat very quickly or just by following their neighbors.