

Report
Wisconsin PDO Tour

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Date of Trip: June 23 to 25

Introduction

- In November of 2008 I travelled to Wisconsin to attend a sand-laden manure separation conference and do a study tour of a number of different dairy operations with unique technical features
- When I reported by findings to the Progressive Dairy Operators (PDO) of Ontario, they were so interested in what I saw that they asked me to organize a tour to Wisconsin to show these features to Ontario Dairy Producers
- This tour was organized with the help of a small committee and resulted in 48 dairy producers and dairy agri-industry people attending
- The group was mostly from Ontario, but also included a producer from Quebec, and a dairy equipment supplier from British Columbia
- The purpose of the tour was to study:
 - Low Profile Cross Ventilated (LPCV) or Wide-Body dairy barns
 - Cooling systems for dairy barns
 - Sand-laden manure separation systems
 - The use of composted bedding pack barns
 - The application of anaerobic digesters on dairy farms
 - The use of composted solids as a bedding material
 - Management of transition cows
 - Management of large dairies (>1,000 cows)

What I Learned

- These are some of the highlights of what I saw and what I learned and what may be applicable to Ontario dairy producers:

Low Profile Cross Ventilated (LPCV) or Wide-Body Dairy Barns

- Of the 11 dairies we visited we saw 4 wide-body barns ranging in size from 8 rows wide housing 400 cows up to the Rosendale dairy with a 16 row wide barn housing 4,000 cows
- Producers choose this style because it has a smaller footprint than naturally ventilated barns of similar sizes
- They feel that these barns give better year round climate control
- The smallest practical size would be around a 400 cow barn, so there is a small percentage of producers in Ontario that may consider this option

Cooling Systems for Dairy Barns

- The outside temperature was about 35 °C on Tuesday and Wednesday, and only slightly cooler on Thursday
- This gave us ideal conditions to experience the cooling systems or the lack of them in the dairies we visited
- Most of the barns were using panel fans to circulate the air over the cows, but the LPCV barns were using evaporative cooling systems
- Sprinkler or high pressure mist systems were used to raise the humidity and lower the temperature in the barns
- The average temperature drop appeared to be about 7 or 8 °C – the temperature drop was dependent on the outside humidity of the air
- One unique system used a Cyclone recirculating fan with a misting panel in front to cool the air

Bedding Materials

- Of the 11 dairies visited seven were using sand bedding and 4 were using composted solids
- Three of the dairies using composted solids, were using solids from anaerobic digesters operating on the farm
- Three of the seven dairies using sand bedding had McLanahan sand separation systems
- One of the others had a Parkson separator – the Parkson unit uses a slightly different process than the McLanahan units
- Dr. Nigel Cook from the University of Wisconsin spoke to us on his research with cow comfort and different bedding materials
- Sand is by far the best to use for the cows, but is difficult to handle with the manure
- Separated solids are much easier to handle, but if not managed correctly can lead to mastitis problems

Manure Treatment

- Two dairies were using secondary manure treatment to concentrate the manure nutrients
- Producers are considering secondary manure treatment so that they can run a treated water stream through their centre pivot irrigation system
- The scale of their dairies (600 to 800 cows milking) make it more economically feasible in WI to consider some of these options
- There may be situations in Ontario where producers will want to consider this as well

Anaerobic Digestion

- We visited three dairies with anaerobic digesters
- All three of these digesters were run by businesses separate from the dairy
- The producers had their manure treated through the digesters and had use of the treated manure as well as the solids for bedding
- They did not have a profit sharing component through the electrical companies

- One producer was looking at secondary sources of income through the digester in the form of special algae, and the production of bio-diesel from by-products

Dairy Management

- The last dairy visited was finishing up a contract with the University of Minnesota for research on transition cow management
- Teaching facilities were incorporated into the barn
- This was a very interesting tour management wise
- The producers were all very interested on the dairies to learn how they managed personnel and cows especially when it came to Rosendale Dairy that is currently milking 3,500 cows and planning to expand to 8,000

The following is a summary of the dairies we visited:

Day 1- Tuesday June 23rd

1. Williams Bedrock Bovines

N1123 Hwy G

Brodhead, WI

Jeff & Brad Williams

Farm office number 608-897-4246

Brad Cell 608-558-4960

Jeff Cell 608-558-3504

bedrockbovines@hughes.net

- Milking 870 cows
- Double 10 Parallel Parlor and holding area built inside the existing dairy barn.
- Four row tail-to-tail 600' x 98' freestall with drive-through feeding and HVLS fans.
- Open ridge and curtain side walls
- New 204' x 304' 8 row freestall barn with cross ventilation.
- Curtain side wall – no cooling panels
- Steel frame barn with R12 insulation
- Sand bedding is used and is separated from the manure with Parkson sand separators to be re-used for bedding. Manure then moves by gravity flow into a 7.8 million gallon poly-lined lagoon for storage. An additional million gallon concrete winter storage for parlor water and manure was also recently built.



1A Parkson Sand Separator



1B Wide-Body Barn Air Inlet

2. Larson Acres, Inc.

Contact: Mike Larson
18218 W. State Rd. 59

Evansville, WI 53536

Office 608.882.6662

Fax 608.882.2320

Cell 608.751.9166

Email: mike@larsonacres.com <<mailto:mike@larsonacres.com>>

- 2,600 total cows
- Double 22 Bou-Matic Xpressway parallel parlour
- Load milk directly on to tanker trucks
- Four row tail-to-tail free stall barn
- Steel frame barn with no insulation
- Open ridge and curtain sidewalls
- Sand bedding
- Special treatment of manure, sand, and water
 - Sand-laden manure is scraped from the free stall barns and transported by 500' of auger to the manure treatment building
 - Sand is first separated from the manure with a McLanahan sand separator
 - The sand is moved twice to let any additional liquid drain from it, and then it is reused in the free stalls 3 to 4 days later
 - The liquid treatment system is an ISS System
 - In Phase 1 of the ISS System, www.nuwaymanagement.com the liquid stream is pumped to a twin drum DairyTech solids separator
 - The separated solids are then put through a FAN screw press to a conveyor and land applied
 - In Phase 2 of the ISS System a NuSpin centrifuge is used to further separate solids from the liquid stream
 - These solids are removed to the conveyor
 - Liquids from the centrifuge is then put through a membrane filter
 - The liquid is divided into two streams:
 - 2/3 of the liquid is separated into a “tea water” that can be irrigated with a centre pivot irrigation system
 - 1/3 of the liquid is a concentrate that can be injected



2A McLanahan Sand Separator



2B ISS Membrane Filter

3. Sunburst Dairy

Brian and Yogi Brown

1003 Hwy PB

Belleville, WI 53508

Brian's Cell: 608 219 703

Fax: 608-424-6441

sunburstdairy@gmail.com

- 500 cows milking
- 45+kg production
- SCC: 80,000 to 90,000
- D10 Boumatic parallel parlour
- 6 row free stall sand barn
 - Built in 2008
 - 50 inch Pack Mats
 - 250 free stalls
- 10 year old free stall barn
 - mattresses bedded with rice hulls
 - 250 stalls
 - Stalls modified for comfort



3A Sand Covered Pack Mat



3B Ramp Inside Manure Storage

4. Zandairy Farms

Jerry & Laura Zander

8488 Prairie Grove Road

Barneveld, WI

53507

(608) 437-8499

jzander@mhtc.net

- 115 cow compost bedding pack barn
- Compost mixed with sawdust
- Tilled twice per day and cleaned out twice per year
- Remodelled parlour in stall barn
- Swing 12 parlour
- 26,000 lb herd average



4A Compost Bedding Pack



4B 12 Swing Parlour

Day 2 – Wednesday June 24th

5. Hoard's Dairyman Farm

N2856 State Highway 89
Fort Atkinson, WI 53538

Jason Yurs

Farm Manager

Phone: 920-563-4822

Cell: 920-728-4822

Fax: 920-568-8648

hdfarm@jefnet.com

- 250 Guernseys
- D10 herringbone expandable to a double 12
- RFID technology
- Two row head-to-head free stall barn
- Designed for ventilation, biosecurity and traffic flow reasons
- Sand bedding



5A Hoard's Dairy Barn



5B Repairing Cracks in Concrete Lined Manure Storage

6. Crave Brothers Farmstead Cheese, LLC

W11555 Torpy Road
Waterloo, WI 53594-9652

Beth Crave

Phone: (920) 478-4887

Fax: (920) 478-4888

E-mail: beth@cravecheese.com

- 950 cows milking
- Cheese plant major part of operation constructed in 2001
- All milk is piped directly to cheese plant
- High production herd
- Anaerobic Digester
- Recycled digested bedding
- 2008 World Dairy Expo Dairymen of the Year



6A Digester at Crave Brothers Dairy



6B Digested Solids Used for Bedding

7. Rosy-Lane, Watertown

Lloyd and Daphne Holterman

Watertown, WI

Phone: 920-262-0797 before 8:30

Email: rosylane@gdinet.com

- Milking 750 3X per day
- Double 12 parallel
- Affi System for heat detection
- LPCV wide- body barn with sand bedding
 - 8 row tail to tail
 - Evaporative cooling panels
- Daphne Holterman – World Dairy Expo Woman of the Year 2009



7A Rosy-Lane Wide-Body Barn



7B Evaporative Cooling Panels

8. Rosendale Dairy, Rosendale

Jim Ostrom

(920) 766-5335 ext. 230

Cell: 920-378-6127

N8997 County Rd M

Pickett, WI 54964

jostrom@milksource.net

Farm: 920-371-4861

- Phase 1 – 3,500 milking
- Phase 2 – additional 3,500 milking for a total of 7,000 to 8,000
- Started milking 500 on Nov 18/08
- 16 row barn wide body barn
- 400' x 1250' cross ventilation
- 80 stall rotary parlour
- Phase 2 will have second barn and second parlour added
- Sand bedding
- Five McLanahan sand separators



8A 3,500 Stall Wide-Body Barn



8B 80 Stall Rotary Parlour

Day 3 – Thursday – June 25th

9. Five Star Dairy, Elk Mound

Lee Jensen

E9817 590TH AV

ELK MOUND, WI 54739

Tel: (715) 879-4570

Cell: (715) 456-4087

Fax: (715) 879-4573

leejensen@centurytel.net

- 850 cows milking with plans to go to 1,100
- 38l avg production
- D16 DeLaval parallel parlour
- Anaerobic Digester
- 6 row free stall barn with mattresses and digested solids
- New cross ventilated barn with high pressure misting
- 150 free stalls and deep bedded with separated solids from the digester
- 140 cows on composted bedded pack



9A Cross Ventilated Dairy Barn



9B Cyclone with High Pressure Mist

10. Fetzer Farms, Elmwood

Paul Fetzer

N4581

Cty Rd S

Elmwood, WI

54740

Phone: (715) 639-3116

Office: (715) 647-2230

Paul's cell: (715) 495-0059

Fax: (715) 647-2231

Email: paul.fetzerfarmsinc@centurytel.net

Mother, Betsy, Sons Paul, Steve and Joe

- 866 milking
- 1200 to 1300 milking when old barn converted
- Double 20 Delaval parlour
- Air curtain at parlour entrance
- Plate cooler and chiller loading directly into tanker trucks
- Baffles no further apart than 50'
- Stalls suspended off a 4" beam to keep stall parts out of the sand
- 8 row wide-body barn 200' x 500'
- "More cows on a smaller foot print"
- Cost per stall lower
- Head-to head stall arrangement
- 72" exhaust fans – 3 hp – 62,500 at 0" static
- Curtain opening in the middle
- May use inflatable curtains in the future
- Sand bedding
- McInanahan sand-laden manure separation system
 - Bucket transfer across barn
 - DairyTech drum separators to remove solids



10A Eight Row Head-to-Head LPCV Barn



10B High Pressure Mist System at Air Inlet

11. Emerald Dairy, Emerald

John Vrieze

2487 County Road G

Emerald, WI 54013

(715) 688-2051 Ext 1

John's Cell: 612-750-8203

gotmilk@BaldwinDairy.com

- 1,100 cows
- Transition Management Facilities (TMF)
- Keep calves to 4 months
- Digested solids for bedding, liquid used for algae, biodiesel, tilapia, hydroponics, etc.
- Emerald Spring Dairy and Baldwin Dairy supply calves to TMF (I think they supply dry cows and then the calves are born here!)



11A Water Treatment System at Emerald Dairy



11B Transition Management Facilities