



Minnesota Dairy Days

Educating the dairy industry on today's and tomorrow's dairy technologies.

Compost Barn Basics

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Minnesota's only research university



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Compost Barns

- Composting Bedded Pack
- Alternative housing
 - ❖ Milking herd
 - ❖ Special needs



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Compost



Freestall



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Compost



Freestall



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Post frame or hoop barn



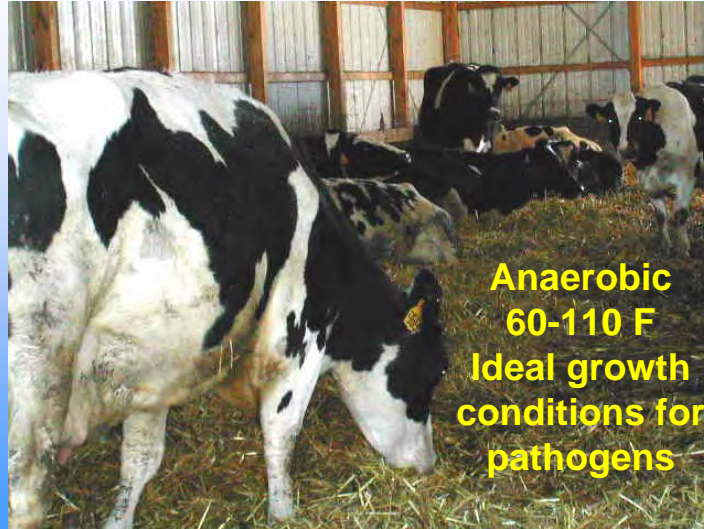
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Not Bedded Pack / Pen



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Conventional Bedded Pack



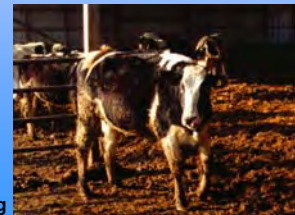
Anaerobic
60-110 F
Ideal growth
conditions for
pathogens

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Observational study of temperature, moisture, pH and bacteria in straw bedding (pack) . .

Ward et al., Vet Record (2002)

- Temperature, moisture content and pH values found in straw yards are conducive to the multiplication of *S uberis* and *E coli*.
- It is not surprising, therefore, that such yards have a reputation for promoting mastitis.



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Compost barn owners report

- Unexcelled cow comfort
- Reduced SCC
- Increased milk production
- Bedding management critical
 - ❖ Stir & aerate 2 times per day
 - ❖ Clean cows



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Stirring and Composting



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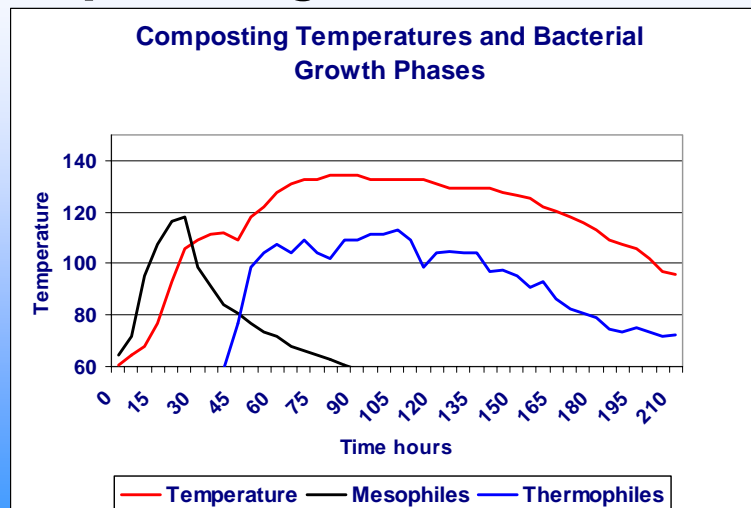
Stirring

- Freshens surface
- Mixes manure and urine
- Aerates and loosens pack



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Composting



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Composting bedded-pack

- Aerobic process
- Composting generates heat and temperatures from 130 to 150 F
- Composting inactivates pathogens, viruses, weed seeds, & fly larvae

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Bedding

- Dry fine wood shavings or sawdust
 - ❖ Straw and corn stalks not recommended
 - ❖ Avoid green or wet wood shavings
- Add semi-load fine wood shavings every three to five weeks when bedding sticks to cows
- Start with 18 to 20 in.



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Stir and Aerate

- Stir bedded pack at least 2 times per day or each milking
- Aerate pack 10 to 12 inches deep with cultivator



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Excellent Cow Prep a MUST!

Mastitis Bulk Tank Culture Results

Strep ag	0
Staph aureus	68
Non-ag Strep	175
Coliforms	195
Staph spec	210

Monthly BT
Culture results
need to look
like these

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Manure handling



- Composting bedded pack provides storage
- Smaller external manure storage
- Concrete alley scraped 2 times/day and stored
- Composted pack land applied in fall
- Follow manure management plan

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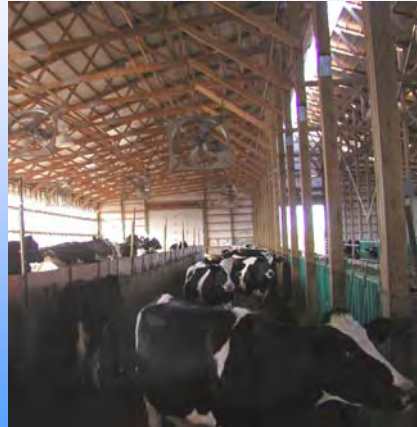
Building elements

- Freestalls & alleys replaced with composting bedded pack
- 80 ft² bedded pack per cow
- 4-ft wall surrounds composting pack
- Concrete feed alley
- Access for cows, stirring & aerating 2 times a day, & bedding semi truck

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Ventilation & location

- Naturally ventilated
- Sidewall height 16 ft suggested
 - ❖ Ventilation
 - ❖ Equipment & semi access
- Mixing fans
- Open ridge
- Locate in open area
- Eave overhang - 3 ft



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Waterer options



Adjacent to
feed platform

Adjacent to
resting space



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Cost/Benefit - Benefits

- Cow comfort & increased productive life - reduced replacement costs
- Lower SCC
- Increased milk production
- Smaller manure storage size & cost
- Lower building costs for less concrete curbing, no freestalls, freestall alleys, & smaller equipotential plane

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Cost / Benefit - Costs

- Increased building costs
 - ❖ Lower cow occupancy - 80 ft²/cow
 - ❖ Increased height
- Concrete wall surrounding pack
- Solid and slurry manure handling equipment
- Bedding \$0.34 to \$0.50/day-cow

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Compost Barns

- Bedding management is critical
- Stir and aerate pack 2x per day
- Dry fine wood shavings or sawdust
- Excellent pre-milking cow prep
- 80 ft²/cow composting bedded pack



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Questions?



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