

DAIRY CATTLE BEDDING NEW OR RECYCLED



Historical Philosophy



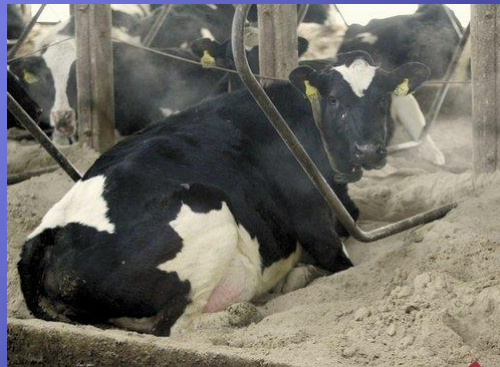
1985

“Government does not solve problems; it subsidizes them”

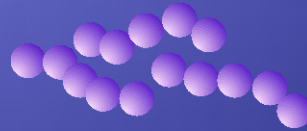
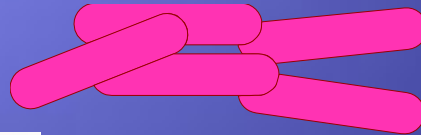


Bedding Historical Perspective

- ◆ Udder Health
- ◆ Milk Quality



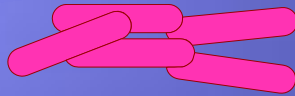
Pathogen Exposure = Fecal Contamination



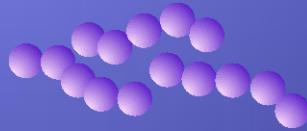
Environmental Pathogens

Bacteria Players

- ◆ Coliforms



- ◆ Environmental
- ◆ streps



Common Traits

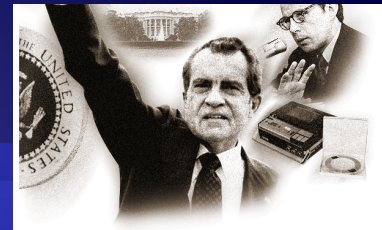
- ◆ Fecal origin

- ◆ Transit teat flora

Teat Flora

- ◆ Recent Contamination





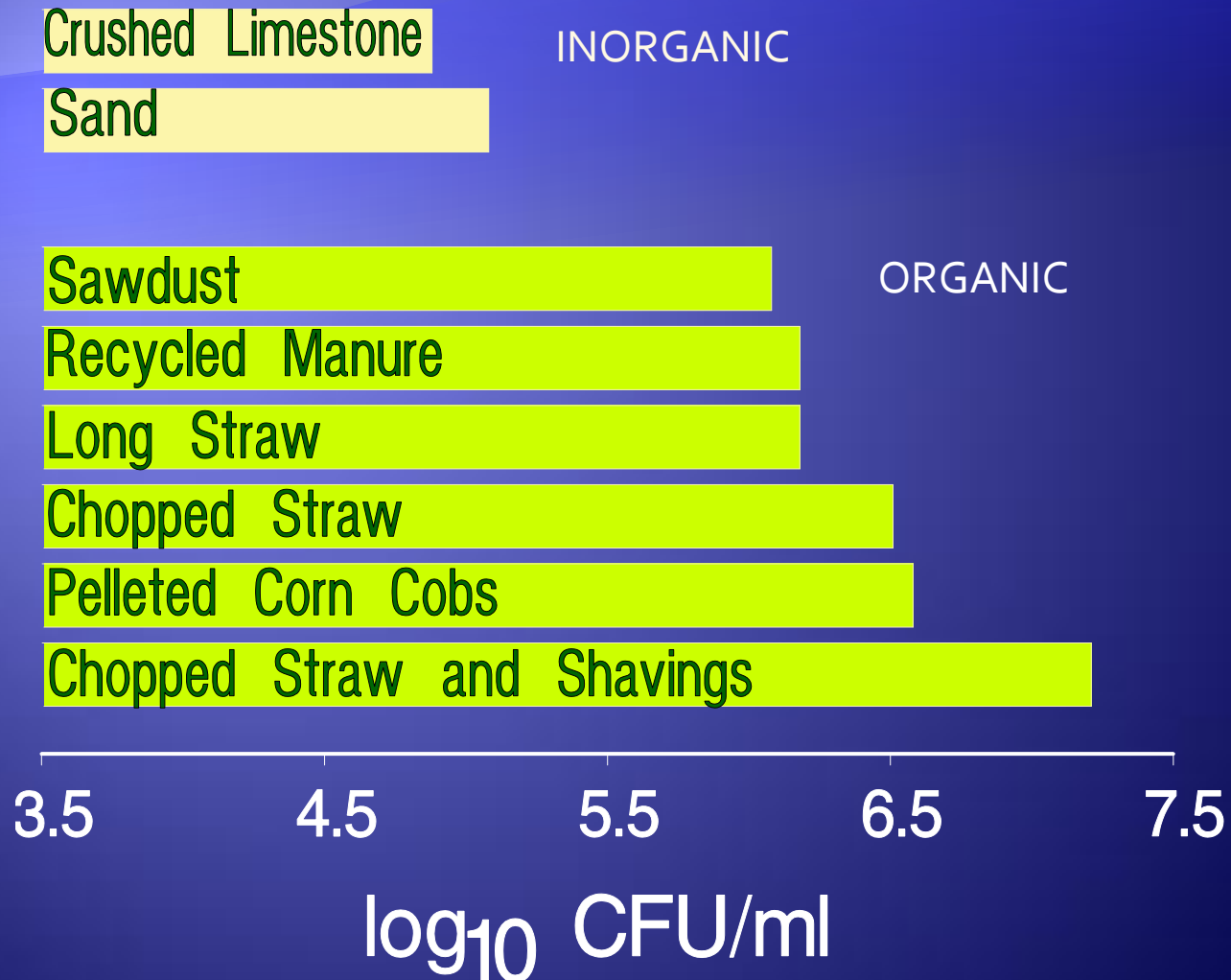
Great Historical Bullsh*t Lies

Danger

- ♦ 1 million bacteria per gram of bedding

Safe

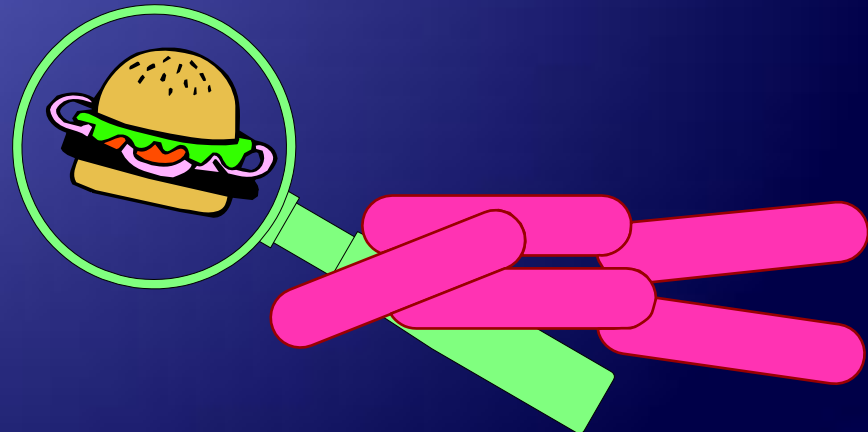
Coliform Bacteria in Bedding



Bacterial Perspective

Organic Bedding Materials

Food!!



Organic Bedding

- ◆ *Klebsiella*
 - ◆ Green sawdust
- ◆ *E. coli*
 - ◆ Recycled solids
- ◆ Streps
 - ◆ Chopped straw



CONCLUSIONS

SAND IS BEST

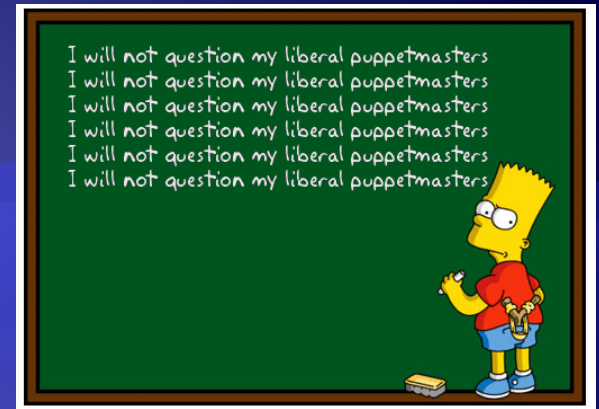
AND

SAWDUST SUCKS!



New Philosophy

- ◆ Bioenergy
- ◆ Sustainability
- ◆ Animal Welfare
- ◆ Renewable Resources
- ◆ Ecological Impact



2010

"I think when you spread the wealth around, it's good for everybody."



Bedding Current Perspective

- ◆ \$ reduction
- ◆ Environment
 - ◆ By-products
 - ◆ Waste
- ◆ Ecology
- ◆ Image





Bedding : New or Used?



MANURE SOLIDS





Effect of Anaerobic Digestion on Environmental Pathogens

Environmental pathogens = Facultative anaerobes



Dry Solids

- ◆ Dry Matter @ Stalls
 - ◆ 30 to 50% typical
 - ◆ goal 50 to 60%
Midwest and Mideast
 - ◆ goal 60 to 70%
arid regions





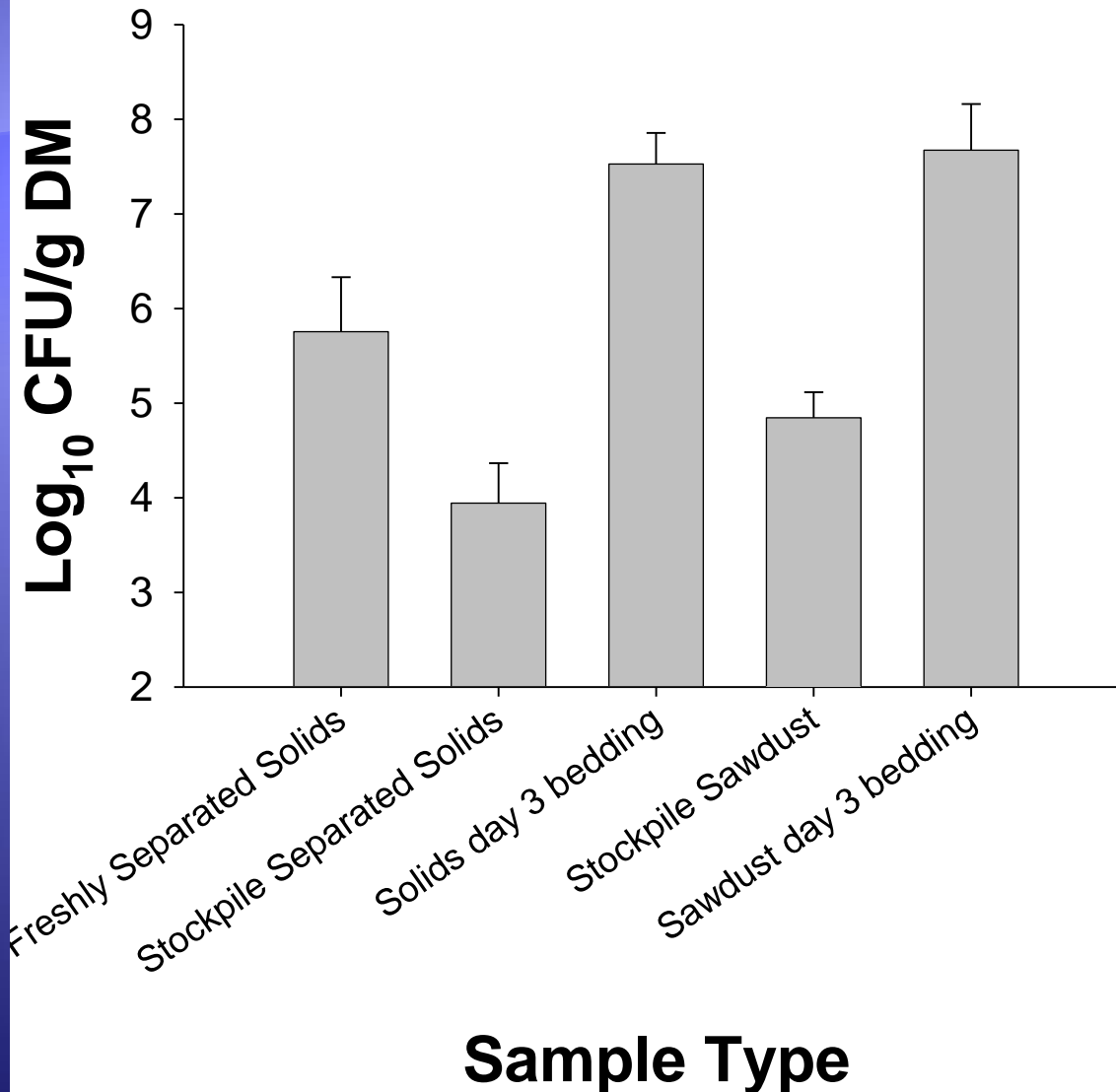
Storage and Drying Solids



Composting



Streptococcal Counts



Disinfecting Bedding



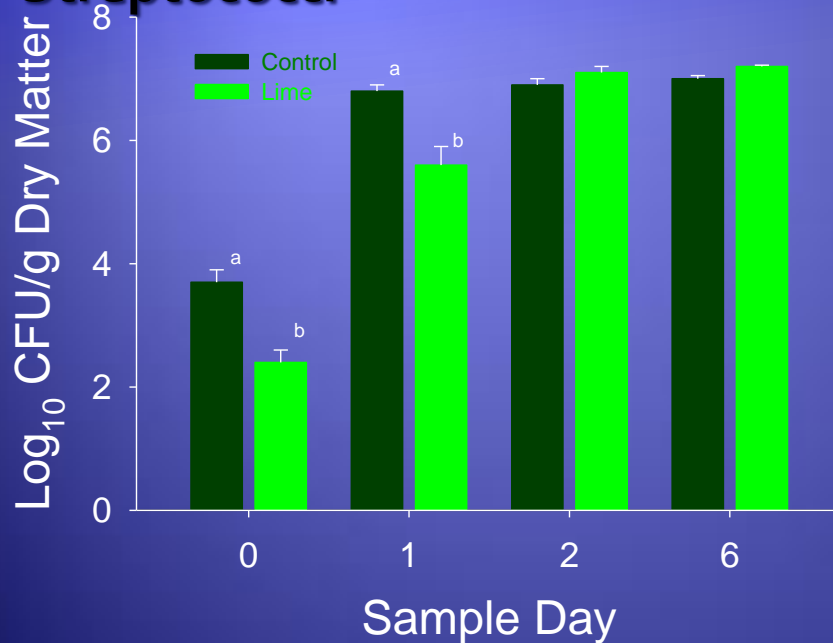
Bedding Conditioners



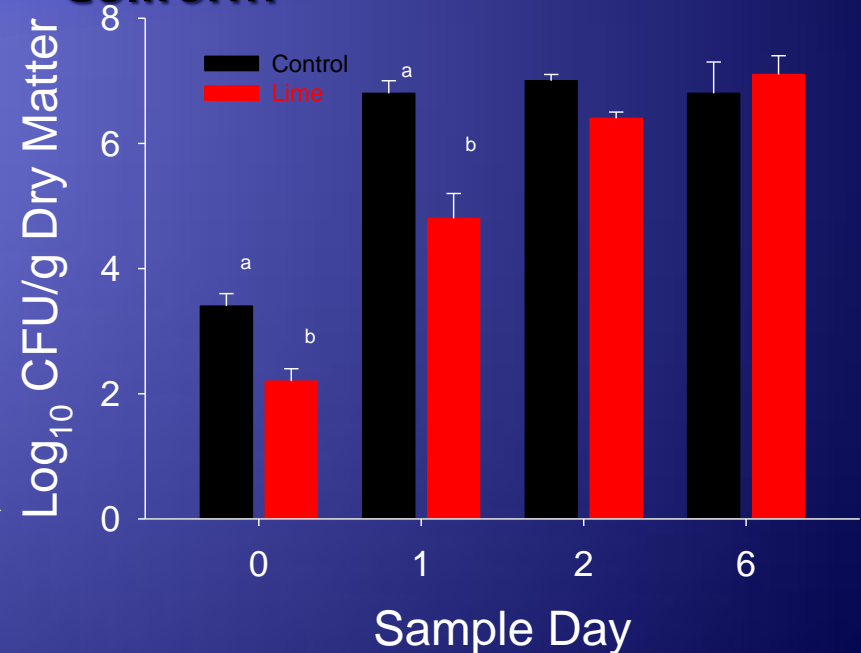
Disinfecting Bedding



Streptococci



Coliform

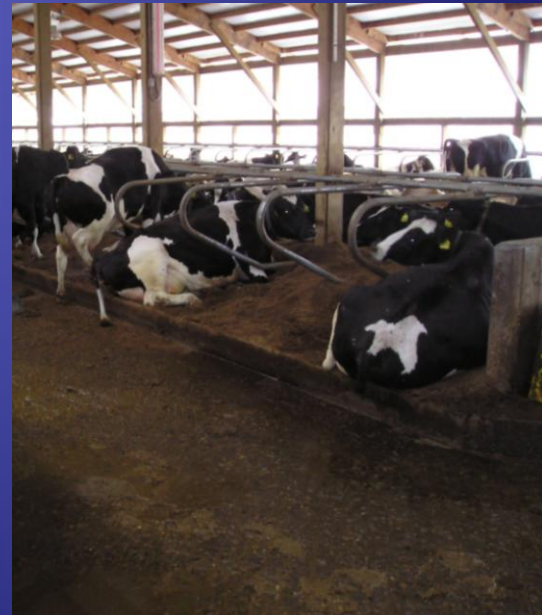


Stall Management

Mattresses



Deep Pack



Manure Compost Packs



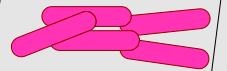
Sand



SAND

Food

No Food



Recycled Sand



PA Field Survey

Kristula et al. (2005)

- ◆ Fresh = Recycled

- ◆ ↑ Moisture

- ◆ ↑ Organic matter



- ◆ ↑ Bacterial Counts



RS Bedding Rules of Thumb

- ◆ Organic matter

- ◆ $< 5\%$ OM

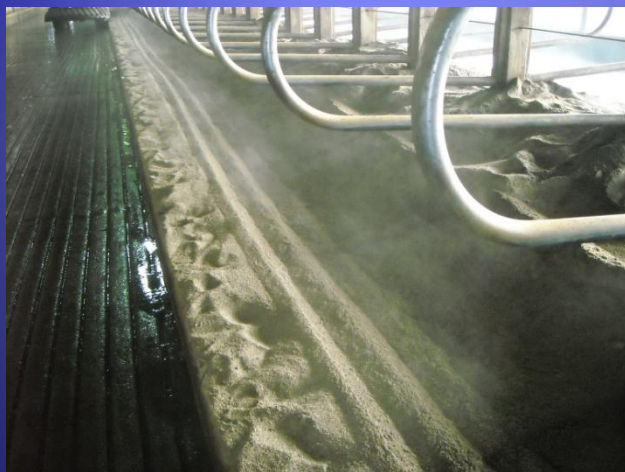


- ◆ Moisture

- ◆ $> 95\%$ DM



Dragon

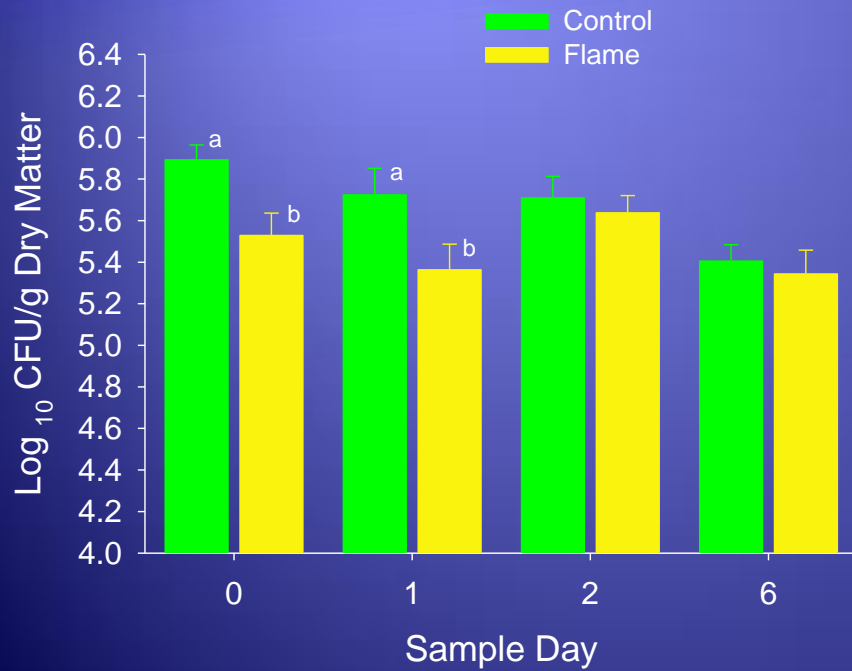


Torched Bedding



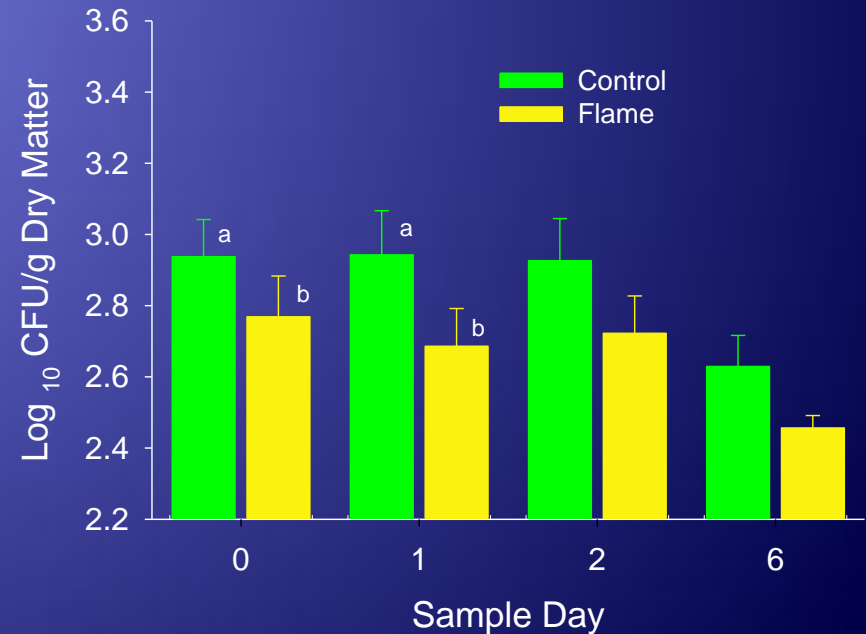
***Streptococci* spp.**

Proximal 25 mm



***Klebsiella* spp.**

Proximal 25 mm



Daily Maintenance



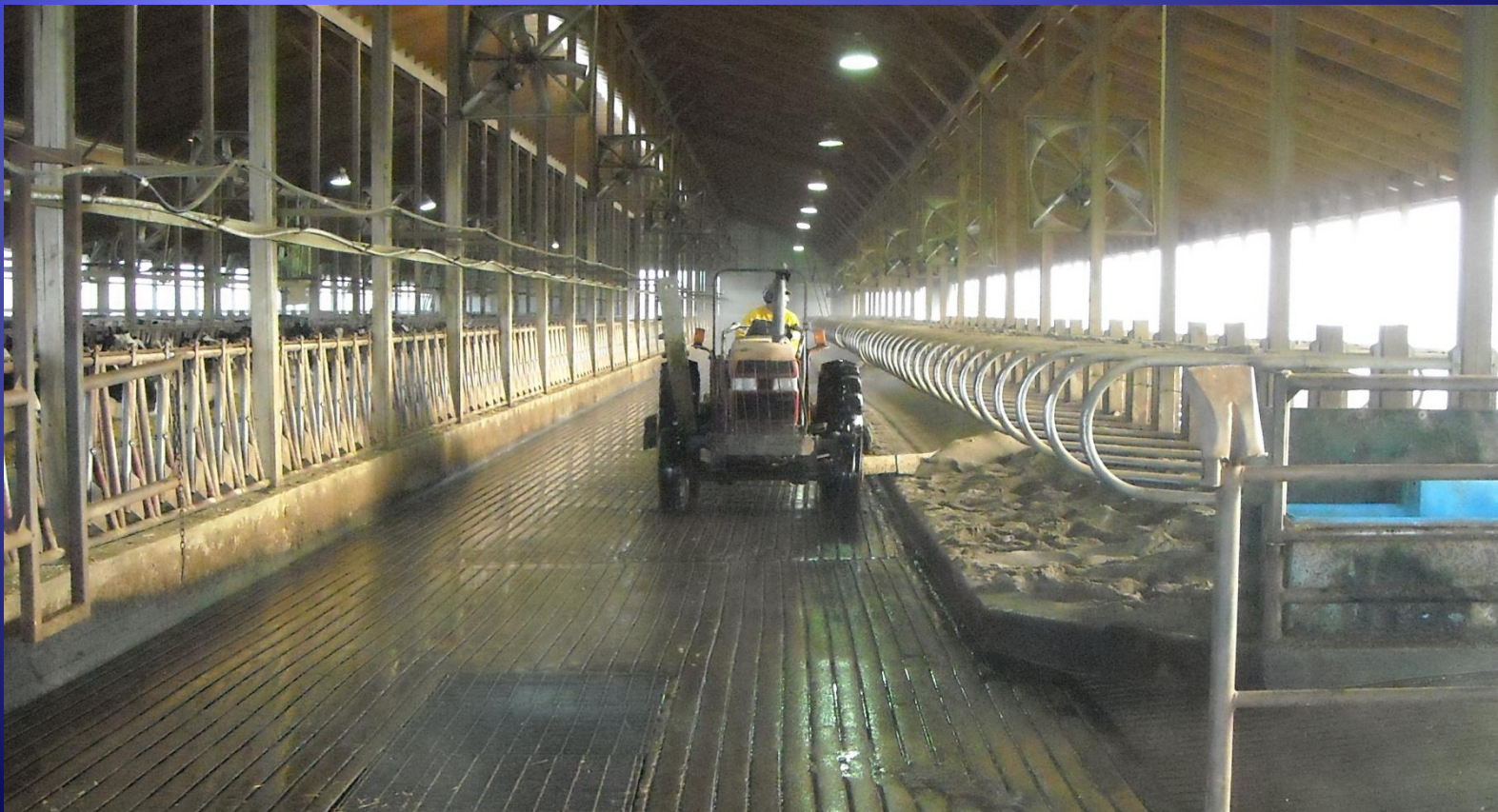
Sand Bedding Depth

(top 1") < (1" to 2") < (2" to 3")

- ◆ Gram-negative
- ◆ Coliforms
- ◆ *Klebsiella*
- ◆ Streptococci
- ◆ Moisture
- ◆ Ash



Grooming Sand < 3"



Societal Structure



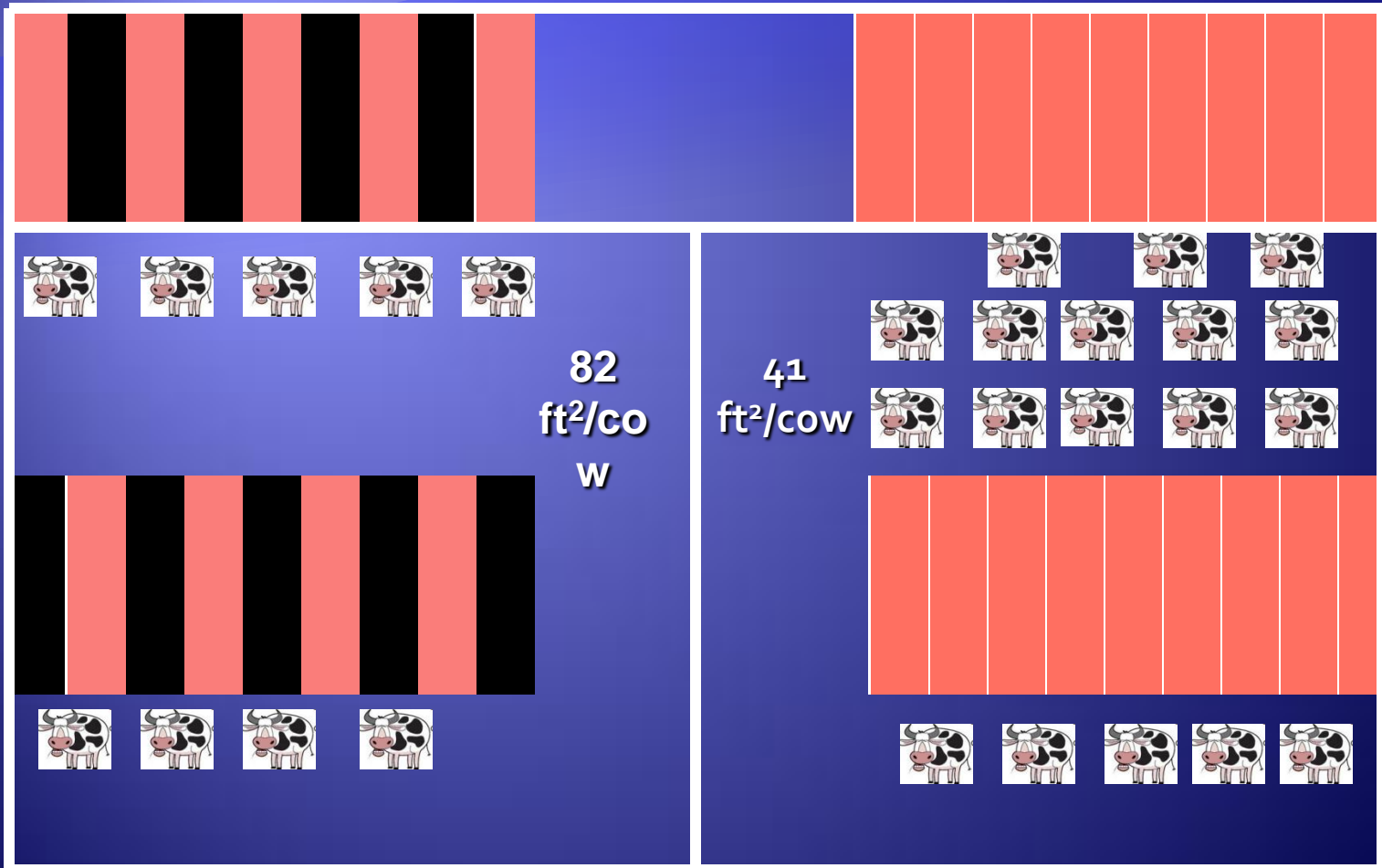
Fecal Contamination = Overcrowding



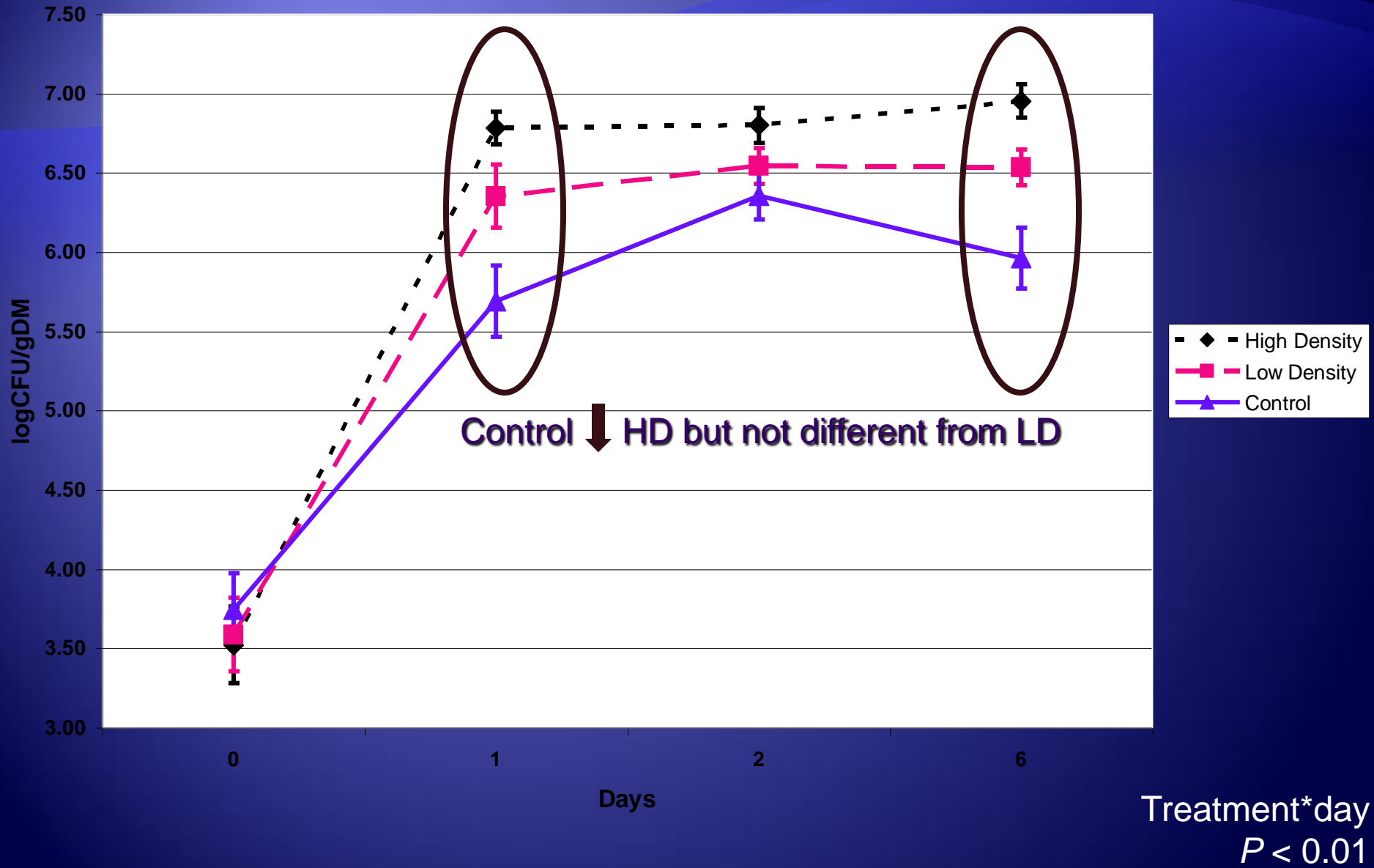
Fecal Contamination



Cow Density Trial



Coliform Bacterial Counts



Alley Manure Removal



Bedding Management

- ◆ Clean
- ◆ Dry
- ◆ Comfortable

