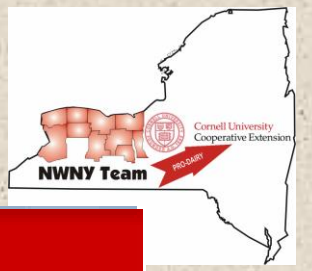
Bedding, Bugs and Calves

maintaining comfort and health



CORNELL

Gerald R. Bertoldo, DVM

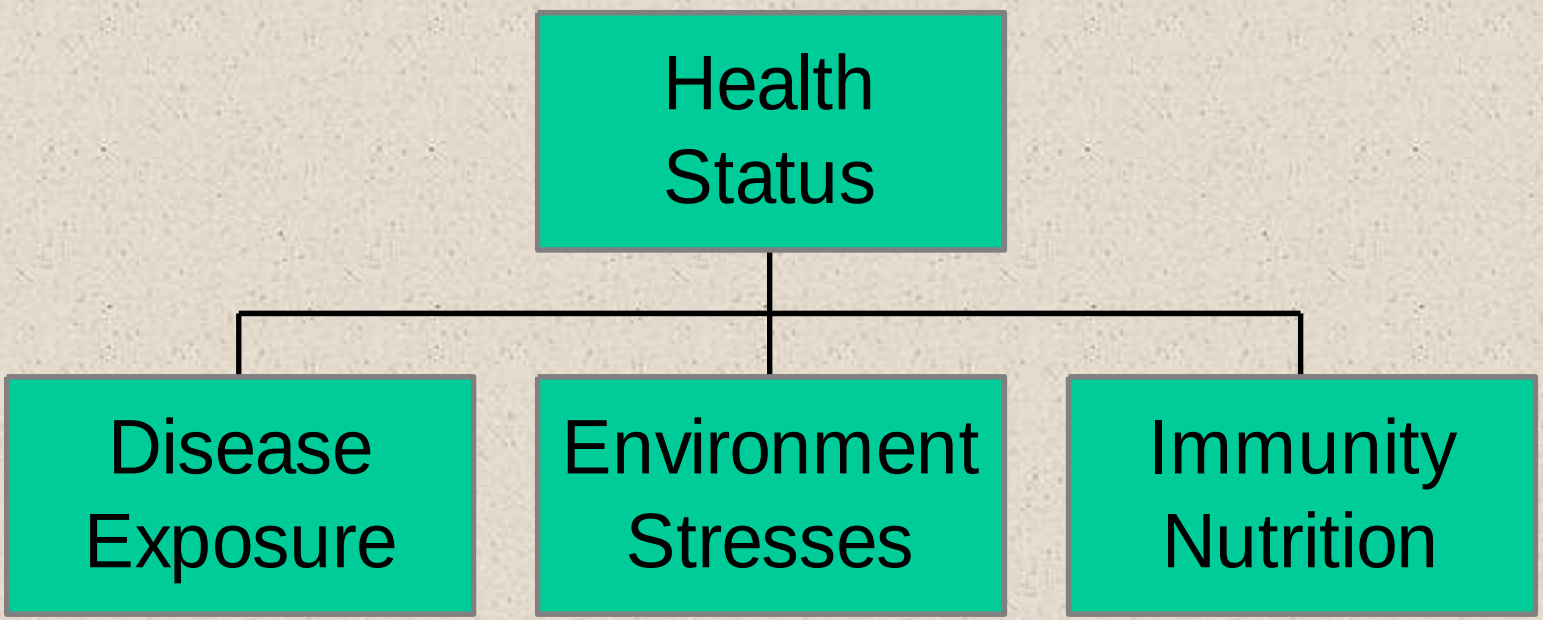
Extension Dairy Specialist

Cornell Cooperative Extension

Raising baby calves is one of the toughest challenges on the dairy!

- Special nutrition
- Naïve immune system
- Pathogen exposure
- Weather variations
- A host of stressful events
- They are bovine infants!!

The Big Picture



What does bedding do for calves?

Dryness

Air quality

Insulation

Protection from pathogens

Cushions pressure points

Mimics spring meadow conditions?

Calving in the wild?

What does it mean to the bottom line?

- Bedding represents 4% of the cost of raising a heifer to calving
- $62 out of the $1,429 input

From a 2003 survey of 8 New York dairy farms

What does it cost to treat sick calves or have a few die?

Calf Preferences

- Nesting
- Dry hair coat
- Warmth/insulation in cold
- Relief from heat
- 28 sq. ft. in pens
- 32 sq. ft. in hutches
- Social interaction

Behavioral patterns for wet calves vary by age

- *Lying down* (73-81%) ↓with age
  (55% lying in daylight vs. near 100% at night)
- *Standing* (4.4-11.4%) ↑with age
- *Eating* (1.4-5.5%) levels off after 2nd wk
- *Grooming* (2.5–4.5%) ↑with age
- *Investigating* (0.2-2.9%) ↑with age
- *Contacting pen* (2.7-9.0%) peaks in 3rd wk

JDS 87, No 11, 2004

Bedding Choices

- Wood shavings
- Straw
- Sawdust
- Pea gravel
- Sand
- Crusher fines
- Paper by-products
- Harvest by-products

Wood shavings

(+)

- Absorbent
- Comfortable
- Insulating
- Low initial pH
- Limited fly support
- Clean hair coats

(-)

- Variability
- Availability
- Cost
- Supports coliform growth

Sawdust

(+)

- Absorbent +/-
- Comfortable
- Insulating
- Low initial pH
- Limited fly support
- Cheaper than shavings

(-)

- Variability
- Lung irritation
- Supports coliform growth
- Less nesting ability
- Dirtier calves

Straw (wheat is best)

(+)

- Fairly absorbent
- Comfortable
- Best nesting
- Best insulating
- Low initial pH
- Clean calves

(-)

- Worst for flies
- High streptococcal growth
- Availability
- Cost

Sand & Pea gravel

(+)

- Comfortable
- Cheap?
- Does not support bacterial growth
- Good drainage
- Best for fly control
- Great base material

(-)

- Dirty calves
- Not for cool to cold weather
- Weight dictates mechanical handling
- Variability of quality

Paper by-products

(+)

- Comfortable +/-
- Cheap?
- Absorbent
- Can use with straw and shavings

(-)

- Dirty calves
- Compresses readily
- Wet surface
- Variability of quality
- Dusty at times

Things to avoid

- Fine particulate size of any material
- Inorganic material year round for young stock under 500 lbs. body weight
- Dusty/musty wood products, hay or straw

Things to avoid

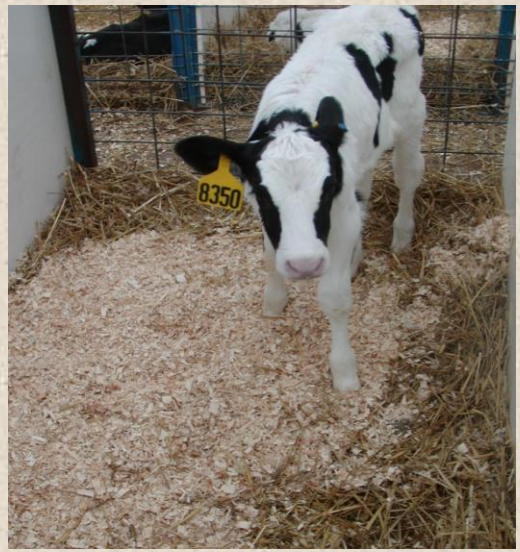
- Organic matter fouling base material
- Pooling of water and feed under buckets
- Runoff with manure or leachate from silage

Things to remember

- For best health results, bedding needs to be added 2-3 times per week regardless of material used
- Coliform counts can approach 1 million cfu per gram in the bedding
- If bedding, weather and care is good, the type of material does not effect disease incidence and growth significantly

Cold Weather

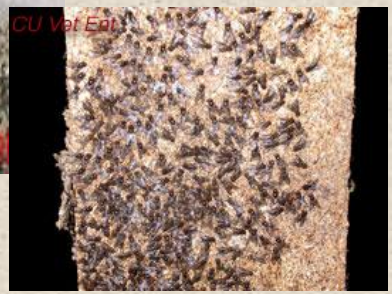
Come in and try the knee drop test!



- Thermoneutral zone < 3 wks old is above 59°F
- Heat loss by convection, conduction and evaporation
- Straw represents ideal fluffy and insulating matter if dry
- Sawdust and paper compact too much loosing effect
- Need at least 4"-6" of material
- Sand and rock fines are plain heat sinks!

Hot Weather

These flies are really a pain!



- Thermoneutral zone < 3 wks old is below 80°F
- Heat loss by convection, conduction and evaporation
- Bacteria thrive and ammonia generation is high
- Straw is comfortable, but attracts flies
- Dropped feed and water from buckets adds to pathogen and fly numbers

Baby calves and parasites

- Nematodes, lice, mange and ringworm can be transmitted from adults or their environment, but are less problematic than flies
- Exposure to sunlight, nutritional status, whether housed in groups or alone and contact with older cattle determines infection
- Flies are dependent on environment alone

House fly

Stable fly

Horn fly

Face fly

Cattle grub fly

Horse fly

Deer fly

Flies

- House *(Musca domestica)* and Stable flies *(Stomoxys calcitrans)* are the major problems around buildings
- Horn, face, horse, grub and deer flies are most prevalent in pastured cattle

House & Stable Flies

- *House flies* do not bite
- They enter buildings
- Carriers of disease and promote coliform growth in mouth parts
- PR problem with non-farm neighbors
- Life cycle is only 10 days

- *Stable flies* bite
- They do not enter buildings
- Males and females attack legs and bellies
- Affect appetite and cause fatigue
- Life cycle is 3-4 weeks

"Pasture" Flies
(horn, horse, deer, face & grub flies)

- *Horn, horse* and *deer flies* bite!
- They do not enter buildings
- Not disease carriers
- 2 month+ life cycles for horse and deer flies; not manure dependent
- 10-20 day life cycle for horn flies; prefer manure patties

- *Face and grub flies* do not bite bite
- They do not enter buildings
- Face flies transmit pinkeye; fresh manure for eggs; 2-3 week cycle
- Grub (heel) flies live only several days; lay eggs on hind leg hairs
- Life cycle takes 1 year

House & Stable Flies "Cultural Practices"

- Sanitation!
- Reduce/remove breeding materials: manure, manure piles, decaying silage, moist waste feed, dirty bedding, wet straw, grass clippings
- Need to minimize these materials every 7 days to beat the house fly cycle

House & Stable Flies "Cultural Practices"

- Do not use straw in the summer
- Minimize dumping of water and feed around calf areas
- Spread manure thin
- Use bait traps and sticky ribbons (good for light to moderate infestation)

Pasture flies
"Cultural Practices"

NOT VERY EFFECTIVE!

- Manure and sanitation does not play a large role in propagation
- Use of insecticides via ear tags, topical sprays, pour-ons and wipes more logical on older, outside animals

"Biological control" Integrated Pest Management

- All flies have natural parasites: wasps, beetles, mites, other flies and fungi
- Most times overwhelmed with fly populations
- Insecticides can kill these as well as the flies
- Lab raised wasps can be helpful for house flies

Muscidifurax raptor
(for house flies, only)

- The only effective parasitic wasp for use against the house fly on dairy farms in the Northeast!
- Other species are wrongly promoted as effective
- Released weekly from mid-May to mid-August
- Cost $3-5 per cow per season

Parting words of wisdom….

- Baby calves are worth the extra buck for bedding appropriate for the season
- Best management practices are not cheap up front, but can pay dividends later
- Animal welfare and "city neighbor" concerns will not get easier

They're counting on you!

Thank you