Bedding, Bugs and Calves
maintaining comfort and health

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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

Health Status

- Disease Exposure
- Environment Stresses
- Immunity Nutrition
What does bedding do for calves?

**Health!**
- Dryness
- Air quality
- Insulation
- Protection from pathogens
- Cushions pressure points
- Mimics spring meadow conditions?

**Comfort!**
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 2<sup>nd</sup> wk
- **Grooming** (2.5-4.5%) ↑ with age
- **Investigating** (0.2-2.9%) ↑ with age
- **Contacting pen** (2.7-9.0%) peaks in 3<sup>rd</sup> wk
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

- 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 losing effect
- Need at least 4”-6” of material
- Sand and rock fines are plain heat sinks!

Come in and try the knee drop test!
Hot Weather

- 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

These flies are really a pain!
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 fly (*Musca domestica*) and Stable fly (*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