Muscid Flies
DIPTERA: Muscidae
house fly, face fly, horn fly, stable fly

Muscid Flies
Where they're produced
- Horn fly - fresh manure
- Face fly - fresh manure
- House fly - organic material, garbage, feces, wet media to support aerobic microbial fermentation
- Stable fly - mixture of organic material (food, manure, soil) and moisture (water, urine)

Horn Fly
Life History
- Egg: oblong, white, 25 - 30 per day
- Larva: legless, tapered, feed on wet substrate
- Pupa: barrel shaped
- Adult: house fly shape

Developmental time:
1 to 3 weeks in summer
Horn fly

Piercing mouthparts
- Lacerates skin
- Ingest blood: ♂ & ♀
- Obtain all nutrients from blood

Horn Fly

- Most common summer time pest on pastured cattle
- Adult flies spend 95% time on animal
- Prefer mature, weaned cattle
- Both sexes feed on blood, 25X per day
- Bites are painful

Horn Fly

Impact
- US losses estimated @ $100 million
- 300+ flies for > 1 month WILL:
  - Reduce calf weaning weights (10 - 20 lb)
  - Decrease milk production
  - Stocker cattle
  - Weight reduction (up to 15%)
- Expend energy
  - Defensive responses (tail flicks, head tosses, restless)
  - Spend more time walking, less time grazing
Horn Fly

Management
Mechanical
Biological
Chemical
- direct application
- self-application
- sustained release devices

Horn fly management

Mechanical
- Physically removing flies from cattle

http://www.youtube.com/watch?v=VNO61NvB-Jo

Horn fly management

Biological
- Wasp parasites
  - Parasitize pupae
  - Releases across range and pasture labor and cost intensive
  - Short dispersal distances
  - Parasitism rate is low (7% seasonal average NE)
- Predators
  - Staphylinids and Nitidulid beetles
  - Feed on eggs, larvae and pupae
- Competitors for same food source
  - Dung beetles
  - Reduce dung accumulation
  - Improve pastures
  - Increase fertility, improve soil structure,
Horn fly management

Chemical

Direct Application
- Sprays and pour-ons
  - Avermectins (ivermectin and generics)
  - Pyrethroids
  - Spinosad
- 2 – 6 wk horn fly control

Horn fly management

Chemical

Self-application: Dust bags, oilers
- Forced-use is best
- 75 – 80% control
- 1 bag per 10 – 20 mature cattle
- Check weekly
Horn fly management

Self-application

Oilers/backrubbers

- Chain wrapped with burlap
- Diesel + insecticide
  (1 gal : 1 pint)
- Pyrethroids, Co-Ral, Revap

Horn fly management

Sustained release

- Altosid + mineral tub
- Target consumption 4 oz per head per day
- 1 tub per 20 – 30 animals
- IGR passed out in manure, kills fly larvae
- Flies migrate, area wide control necessary

Mineral Supplement + IGR insecticide

- Tub and loose mineral
- Cattle separated (¼ - 1 mi)
- Free choice
  - 4 oz. per day
- Tubs weighed weekly
- Mineral supplied as needed
- Manure pits collected weekly
  (treated and control)
- Fly counts taken weekly
**Loose Mineral Supplement + IGR Insecticide**

**Conclusions**
- Consumption excellent (≥ 4 oz per day per head)
- Very good larval control
- No effect on adult flies
- Flies will migrate to treated cattle from untreated cattle (1/2 to 1 mile not enough)
- Migrating flies affected outcome

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**Horn fly management**

**Insecticide ear tags**

- Revolutionized horn fly control
  - Insecticide slowly released
  - Distributed through hair coat
  - Kills horn flies on contact

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**Horn fly management**

**Insecticide impregnated ear tags**

**Advantages**
- Ease of application,
- Long duration of efficacy,
- Small amounts of insecticide is placed in the environment and only on specific targets, and
- Reduced risk to applicators
Horn fly management

Disadvantages
• Cost
• Resistance

Horn fly management

Resistance Management
✓ Alternate ear tag chemistry
✓ Alter application methods
✓ Don’t tag before onset of fly season
✓ Tag bulls, cows, steers, not calves
✓ Remove tags at end of fly season

Summary Horn Fly Control
• Dust bags / Oils
  – Good control, no resistance problems
  – Weekly checking, repair/replace bags
• Feed additives and boluses
  – Convenient
  – No effect on migrating flies
• Sprays / Pour-on
  – Economical
  – Multi-applications
• Insecticide ear tags
  – Easy to apply
  – Resistance
Muscid Flies

**Face fly Musca autumnalis**
- Nonbiting fly
- Introduced in North America in 1952
- Prefers temperate, moist areas
- Common in parts of Montana
- Females feed on facial secretions

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**Face Fly**
- Eggs deposited in fresh manure
- Larvae feed in manure
- Pupate in soil
- Adults active from April – October
- Overwinter as adults

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**Face Fly**

Mouthparts
- Spongy with preoral teeth
- Can't cut skin
- Ingest liquids
- Common among other filth flies
Face fly

Feeding abrasions eye tissues

House Fly  Face Fly

Face fly feeding on conjunctiva

Steer after 5 days of confinement with house flies
Face fly

Effects on cattle
- General annoyance
- Damage eye tissue
- Mechanical vector of pinkeye
- Morellosia bovis
- Biological vector of eyeworm, Theazi

Face Fly Management
- Mechanical
- Biological
- Chemical