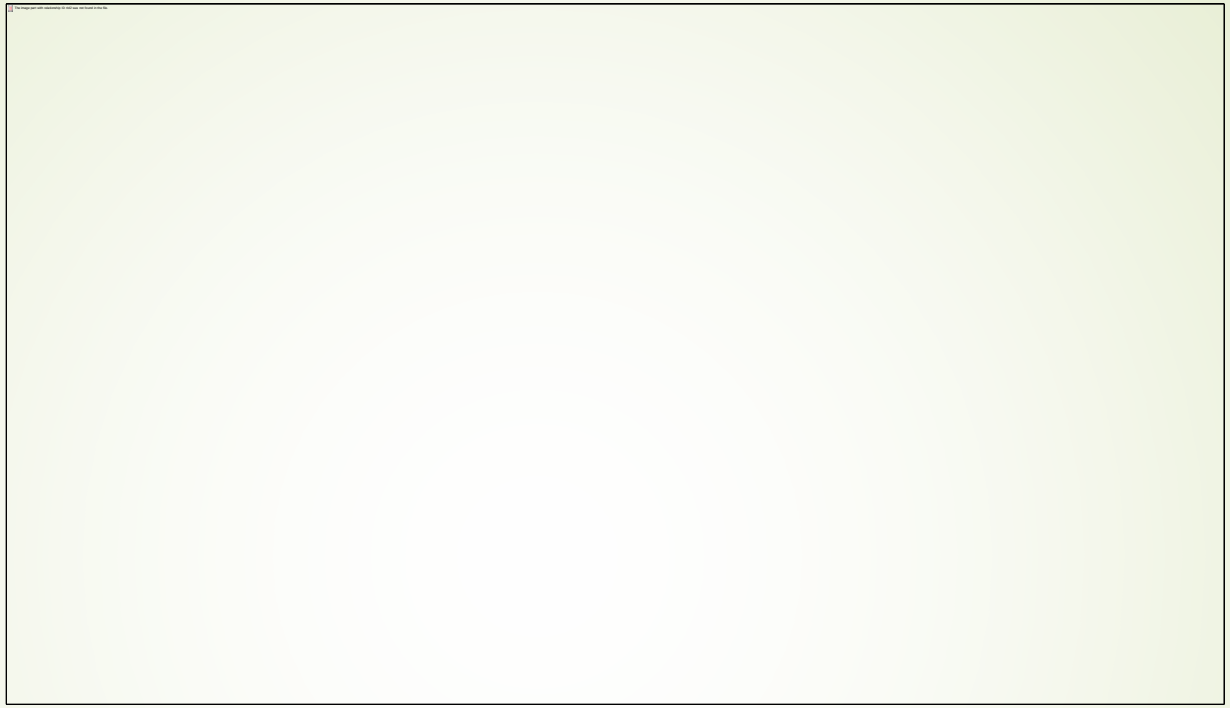


Cow Calf Herd Health

Jen Taylor DVM

Goals

- Produce an adequate immune response
- Provide protection against clinical disease
- Provide long lasting protection
- Minimal Side Effects
- Provide a positive cost/benefit ratio

Classes of Cattle

- Calves
- Stockers
- Replacement Heifers
- Cows
- Bulls

Considerations

- Challenge
- Class of Cattle
- Source of Cattle
- Circumstances-facilities etc
- Marketing
- Stressors
  - Nutritional
  - Weather

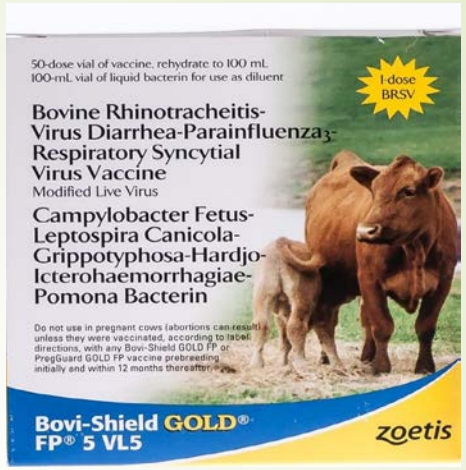
BQA-Beef Quality Assurance

- Storage
- Handling
- Mixing
- Dose
- Route

Common Dieseases

- Pneumonia
- Calf Scours
- Lepto abortion
- Trich
- Foothill Abortion
- Anaplasmosis
- Anthrax
- Grass Tetany
- Foot rot

Vaccine Types



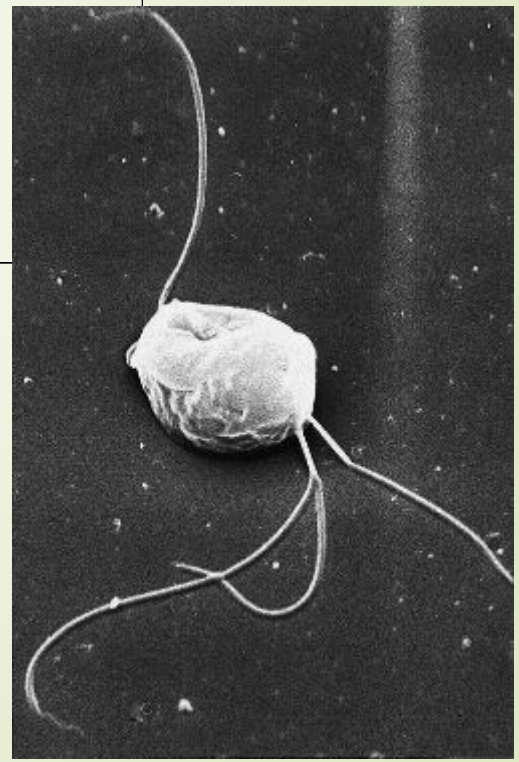
- Intranasal
  - Viral
  - Bacterial
- Modified Live
  - Viral
  - Viral and Bacterial (killed) combined
- Killed
  - Viral
  - Bacterial
  - Protozoal

Differences in Vaccine Types

Characteristic	MLV	Killed
Duration of Immunity	Longer	Shorter
Spectrum of Coverage	Many Strains	Few strains
Needs booster	Less	Yes, required
Amount of antigen	Less	More vaccine reactions
Safety	Can cause disease	Safer

Causes of Reproductive Failure

- Bacterial
  - Brucellosis
  - Leptospirosis
  - Vibriosis
  - EBA (Foothill)
- Viral
  - IBR
  - BVD Type 1 and 2
- Protozoal
  - Trichomoniasis
  - Neosporosis



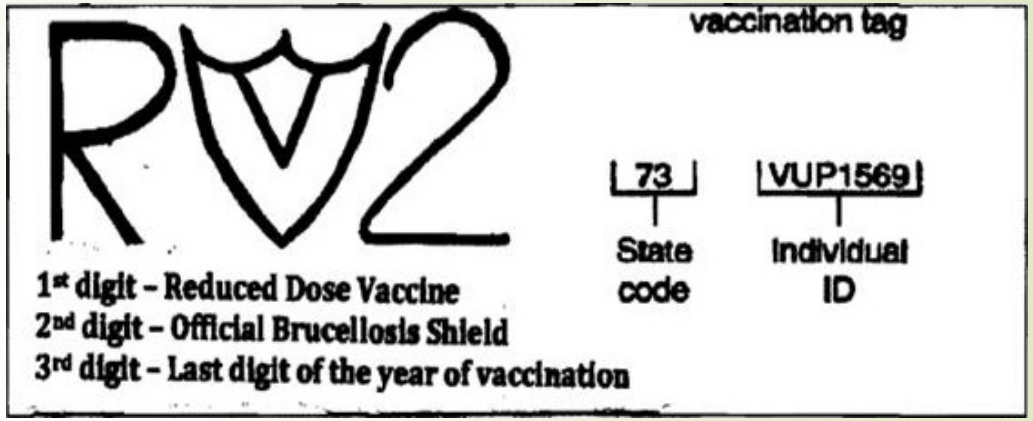
Tritrichomonas foetus

- Bulls are persistently infected
- Cows will become pregnant the abort and clear infection after 2-3 cycles, 2% remain as carriers
- Clinical signs decreased pregnancy rate or extended calving season
- Test bulls after 10 days of no contact with cows
- PCR vs Culture and microscope
- Positives to slaughter

Epizootic Bovine Abortion (Foothill)

- Bacteria Pajaroellobacter abortibovis
- Tick that bites but doesn't embed
- Slow growing –replicates once per day
- As calf develops immune system destroys itself fighting the bacteria
- Approximately 4 months to abort
- Experimental vaccine

Brucellosis “Bang’s Diesease”



- Zoonotic –undulant fever
- Brucella abortus
- California free since 1997
- State-Federal Eradication protocol
- Slaughter surveillance, milk ring test, blood test with some livestock movement
- California has a mandatory vaccination program 4-12 months of age for change of ownership, unless to a registered feedlot

Basic Cow Vaccine Protocol

- 5 way viral (IBR, BRSV, PI3 and BVD Type 1 and 2)
- Lepto 5
- Clostridial
- Vibrio

Cow Vaccines Based On Need

- Trich
- Anaplasmosis
- H. somnus
- P. multocida
- M. haemolytica
- Scours (E. coli, Rota, Corona)
- Neospora
- Pinkeye

Replacement Heifers

- Transition from calfhood vaccine
  - Lepto
  - MLV Respiratory/Reproductive 2 doses
  - Booster Clostridial
  - Vibrio
  - Foothill Abortion
  - Anaplasmosis

Lepto

- 5 serovars (Hardjo and Pomona in North America)
- Abortion, stillbirths, weak calves
- Twice annual vaccination
- Don’t forget heifers

Clostridial- All Classes

- Blackleg-C. chauvoei
- Red water-C. hemolyticum
- Enterotoxemia-C. perfringes types B, C and D
- Malignant edema-C. septicum
- Black liver-C. novyi
- Black neck-C. sordelli
- Tetanus-C. tetani

Pneumonia

- Viral
  - IBR
  - BRSV
  - PI3
  - BVD Type 1 and 2
- Bacterial
  - Pasteurella multocida
  - Mannheimia haemolytica
  - Haemophillus somnus
  - Biberseinia trehalosi

Calf vaccination programs

- PreVac $48/head
- WeanVac $72/head
- No program $0/head

Pinkeye

- Commercial
  - Piliguard-trivalent M. bovis single dose
  - Pinkeye shield XT4 M. bovis single dose
  - 1-Site-XP- 8 strain M. bovis single dose
  - Ocu-guard MB-1 M. bovis single dose
  - Solidbac Pinkeye IR/PR M. bovis single dose
  - Addison Labs M. bovoculi 8 strain requires booster
- Autogenous
  - Strains of both M. bovis, M. bovoculi and Mycoplasma
  - Time to culture and produce
  - Drift
  - Cost and scale

Calf Scours

- Bacteria
  - E. coli — <5 days
  - C. perfringens B,C — 5-30 days
  - C. perfringens D — >30 days
  - Salmonella — >15 days
- Viruses
  - Rota — 5-15 days
  - Corona — 5-15 days
  - BVD — >30 days
- Protozoa
  - Cryptosporidia — 5-30 days
  - Coccidia — >15 days

Scours Vaccines for Calves

- Calf-Guard (Rota and Corona) orally newborn
- Bovine Ecolizer (C. perfringens type C and K99 E. coli) orally newborn
- First Defense (Corona virus and K. 99 E. coli) orally newborn
  - Practical
  - Better way?

Vaccinate The Cow

- Scourguard 4K and 4KC (2 doses- 3 weeks apart, 2nd dose 3-6 weeks pre-calving. Annually 3-6 weeks pre-calving)
- Scour Bos 4 and 9 (8-16 weeks prior to calving, booster in 4 weeks, 8-10 weeks prior to calving annually)
- Guardia (3 months pre-calving, 2nd dose in 3-6 weeks, annually 5-7 weeks pre-calving)
- Requires good colostrum intake by the newborn

Bulls

- Vaccinate like the cows with these exceptions
- Vibrio-Vibrin 2x the dose
- Trich????
- BVD Status
- Anaplasmosis
- Johne's

Immune Function

- Nutrition
  - Immune function requires energy and changes requirements for nutrients
  - Deficiencies increase susceptibility to disease
  - Deficiencies increase severity of disease
  - Mineral deficiencies depress immune function and resistance to stress even with sufficient energy and protein

Trace Mineral Supplementation

Feed	County	Supplement	Copper	normal	Selenium	normal	Cause of death
Irrigated pasture	Stanislaus	Trace mineral block	2	25-100	0.026	0.25-0.5	Open, severe copper def.?
Alkali/native foothills	Merced	Lick tubs w/ trace min.	1.4	25-100	0.24	0.25-0.5	Open, severe copper def. ?
irr. Pasture/nativie foothills	Stanislaus	Quality loose mineral	55	25-100	0.8	0.25-0.5	E. coli diarrhea
irr. Pasture/nativie foothills	Stanislaus	Quality loose mineral	57	25-100	0.82	0.25-0.5	E. coli diarrhea
irr. Pasture/nativie foothills	Stanislaus	Quality loose mineral	88	25-100	1	0.25-0.5	E. coli diarrhea
native foothills	Mariposa	Quality loose mineral	99	25-100	0.45	0.25-0.5	Bacterial pnuemonia
auction source	Merced	TMR no mineral	16	25-100	0.16	0.25-0.5	Somnus
auction source	Merced	TMR no mineral	11	25-100	0.23	0.25-0.5	Somnus
feedlot	Mariposa	TMR w/ mineral	55	25-100	0.27	0.25-0.5	Bacterial pnuemonia
Irrigated pasture	Merced	Trace mineral block	23	25-100	0.17	0.25-0.5	Toxin in feed
Irrigated pasture	Merced	Trace mineral block	11	25-100	0.16	0.25-0.5	Toxin in feed
Irrigated pasture	Merced	Trace mineral block	42	25-100	0.25	0.25-0.5	Toxin in feed
Irrigated pasture	Merced	Trace mineral block	2.9	25-100	0.22	0.25-0.5	Toxin in feed
native foothills	Merced	Loose mineral	29	25-100	0.18	0.25-0.5	Bacterial pnuemonia
native feed	Mariposa	Quality loose mineral	49	25-100	0.36	0.25-0.5	Ruptured liver abscess
feedlot	Madera	Trace mineral block	24	25-100	0.14	0.25-0.5	Bacterial pnuemonia
native feed	Mariposa	Protein tub w/ mineral	6.8	25-100	0.15	0.25-0.5	Bacterial pnuemonia

Fetal Programming:"Effects of Organic or Inorganic Co, Cu, Mn and Zn Supplementation to Late Gestating Beef Cows on Productive and Physiological Responses of the Offspring"

- Calves born to dams supplemented with inorganic trace minerals in their 3rd trimester were 25 pounds heavier at weaning than the controls
- Calves born to dams supplemented with organic trace minerals were 53 pounds heavier at weaning than controls and 28 pounds heavier than the inorganic supplemented calves
- Calves born to the cows supplemented with organic trace minerals were worth $70 more per head
- Those same calves were 68 pounds heavier when finished, with a 42 pound heavier hot carcass weight
- Between weaning and the feedlot 22% fewer of the organic mineral group calves were treated for respiratory disease

Trace Mineral Supplementation

- Quality mineral containing both organic and inorganic trace minerals $22-32 per bag
- Most minerals are 4 oz consumption per day (1/4 lb per day X 365 days)= 91 lbs per year =(1.8 bags X $27)=$48.60
- $70 increased return on calves from dams supplemented with organic trace minerals ($70-49)= $21 net return
- Previous study trace minerals were only fed during the third trimester
- Reproductive benefits
- Vaccine response
- Colostrum quality

Internal Parasites

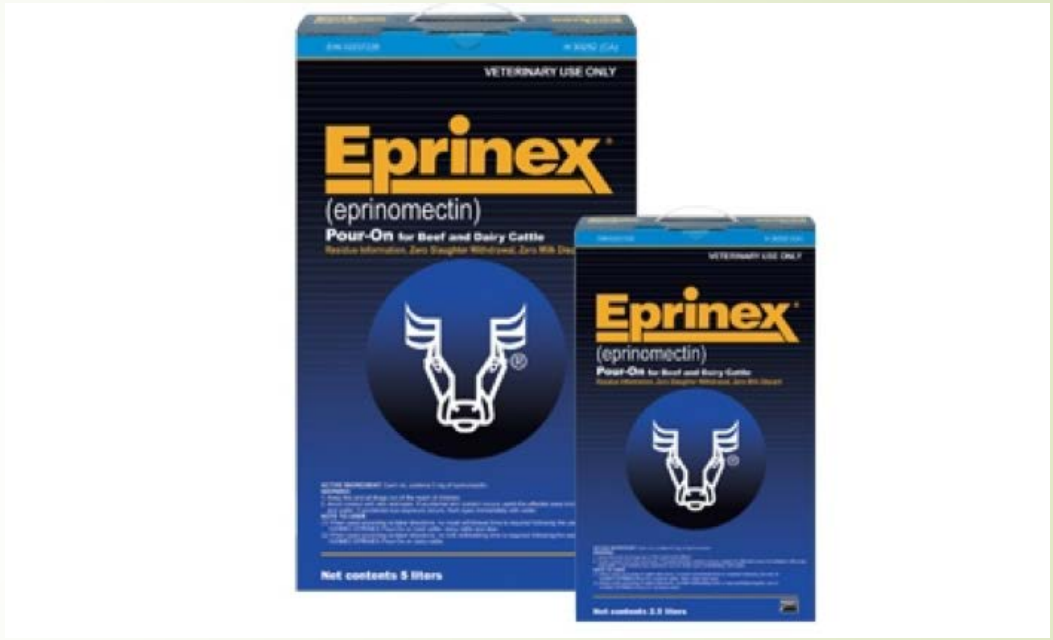
- Nematodes
  - GI Worms
    - Cooperia
    - Haemonchus
    - Ostertagia ostertagi
- Lung Worms
  - Dictyocaulus
- Liver Flukes
  - Fasciola hepatica

Advantages

- Better health
- Better immunity
- Improved weight gain
- Improved reproductive performance

3 Classes of Dewormers

- Benzimidazoles
  - Safe-guard (fenbendazole)
  - Albendazole (Valbazen)
  - Oxfendazole (Synanthic)
- Nicotinic agonists
  - Levamisole
- Macrocyclic lactones
  - Avermectins
    - Ivermectin, Eprinomectin, Doramectin
  - Milbemycins
    - Moxidectin



Strategies

- Appropriate dose
- Proper time
- Rotate products
- Good pasture management
- Manage new additions
- Refugia –no proven studies

Conclusion

- Vaccine program is a compromise between disease challenge and management practices
- Immune function
- Markets