



# Texas Authorized Personnel Program (TAPP) – Module 2

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- *Brucellosis*
- *Bovine Tuberculosis*
- *Bovine Trichomoniasis*
- *Scabies and Mange Mites*



# Texas Brucellosis Eradication Program

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# *Brucella* Species



*Brucella abortus*  
Cattle, Bison & Elk



*Brucella melitensis*  
Goats



*Brucella suis*  
Swine, Reindeer



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# Brucellosis Eradication Program in Texas

- February 2008 – Texas Achieved Brucellosis Class Free Status
- February 2013 – USDA lifted high risk status
- Approach:
  - Vaccinate calves
  - Test cattle/domestic bison
  - Send infected to slaughter
  - Tracing, surveillance, investigation of affected herds

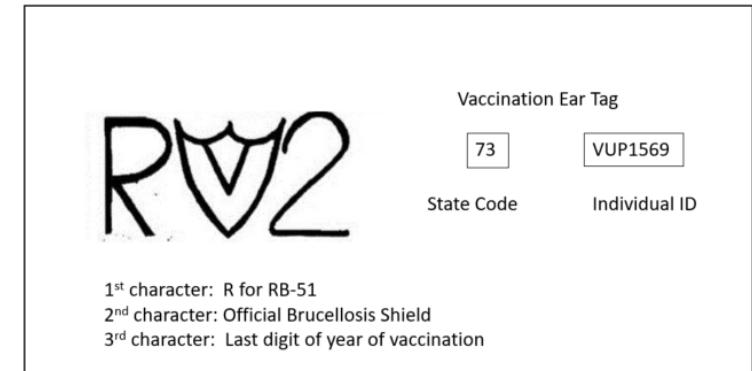




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# Brucellosis Vaccination

- *Brucella abortus* Strain 19 (not used since 1996)
- *Brucella abortus* RB-51
  - Tattoo – “R, shield, # yr”
  - Approximately 4 million/year)
- 14 western states require female cattle entering to be vaccinated
- *Brucella abortus* RB-51 Vaccine by Colorado Serum Company; available from major veterinary distributors





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# Changes in National Surveillance Bovine Brucellosis

- All states in U.S. considered brucellosis free by USDA
  - Designated Surveillance Areas around Yellowstone Park (GYA) in parts of Idaho, Wyoming, and Montana
- In 2012, slaughter surveillance in U.S. reduced:
  - All test eligible slaughter cattle (approx. 2 million) → approx. 450,000 samples/year
  - Number of representative slaughter plants from 40 → 9
- In 2020, only 5 slaughter plants still collecting samples
- In 2021, reduced to 4 slaughter plants



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# Changes in Texas Surveillance Bovine Brucellosis

- Mandatory testing for change of ownership suspended in 2011 due to budget concerns during drought
- State inspected slaughter facilities continue to test
- Approximately 100 brucellosis free herds exist in Texas
- Diagnostic and export testing by veterinarians





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# Brucellosis Threats to Texas Herd

- Importation from Greater Yellowstone Area (GYA) – incubating cow, latently infected heifers
  - TAHC adopted rules for post entry test of cattle from GYA in 2013
    - Retest adults 60-120 days after entry at no charge
    - Heifers must be retested after first calf
    - Stocker heifers waived from retest upon entry into feedlots
- Cattle smuggled in from Mexico or cattle walking across the border in remote areas
- Undetected herd already in the state; reduced surveillance will delay detection
- *Brucella suis* complicates the diagnostic picture and raises zoonotic concerns



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# Brucellosis Threats to Texas Herd

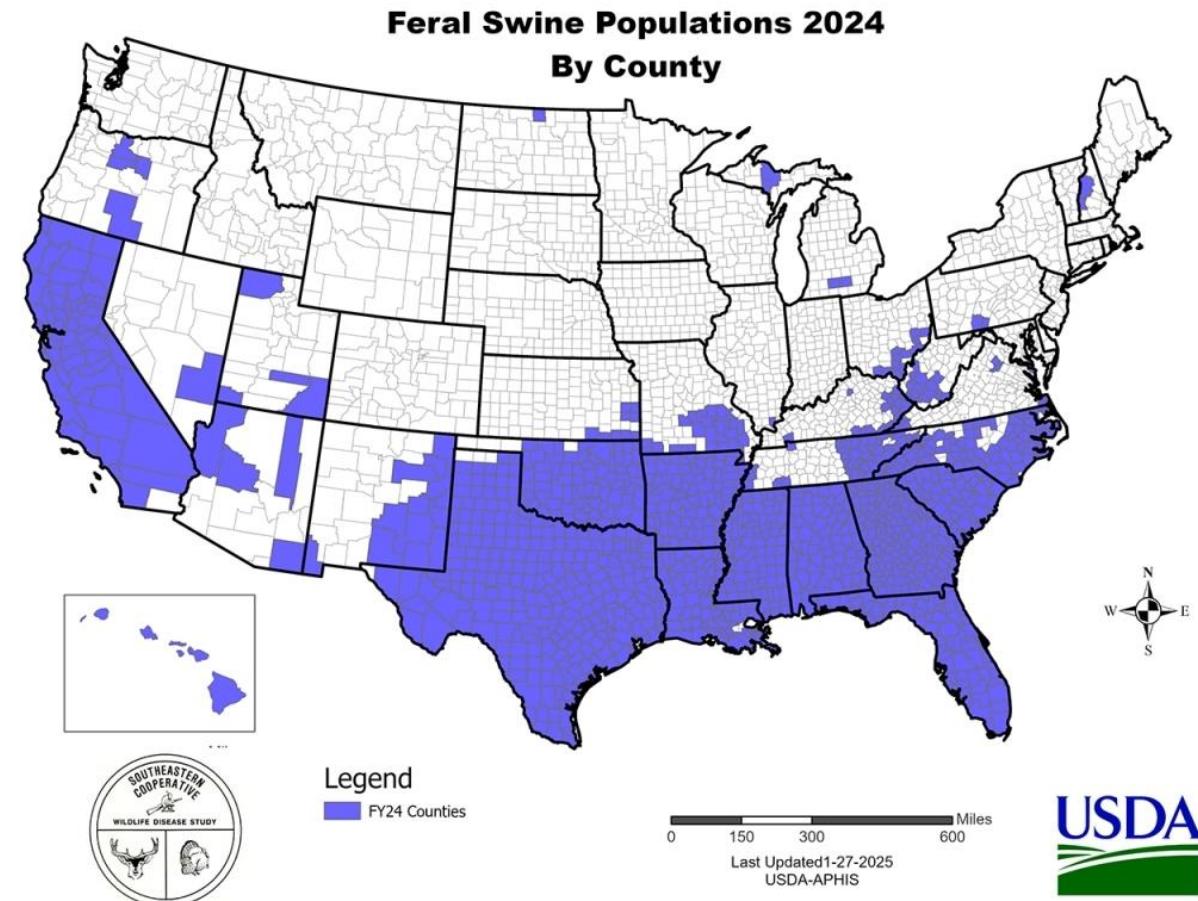
- Genetic fingerprint studies indicate a link between *B. abortus* found in elk and bison in GYA and an affected cattle herd in Texas (2004, depopulated)
- Imported beef breeding cattle from Mexico
  - Undergo testing at point of entry
  - Repeat testing by regulatory personnel 4-6 months post entry



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# Swine Brucellosis

- Swine brucellosis is also transmissible to humans, horses, cattle





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# Beware of Swine Brucellosis!

- Brucellosis-infected feral swine are a threat to cattle
- 66 *B. suis* infected cattle to date in last 6 years including 1 dairy infected three times
- Texas still averages 100 test positive cattle per year
- Herd tests may be necessary to rule out *Brucella abortus*





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# Feral Swine Holding Facility

- Regulated by TAHC
- 121 in Texas
  - Inspected monthly
  - Terminal facility
- Allows sale of live feral swine
- 2 slaughter buyers in Texas
  - Frontier – Fort Worth
  - Southern Wild Game – Devine
- Inspected monthly
- Hogs over 60 lbs. marketed as “wild boar”





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# Fistulous Withers/Poll Evil

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# Fistulous Withers/Poll Evil

- Inflammation of the supraspinous bursa
- Exudative process
  - May swell and rupture
  - May heal over and re-rupture
- Difficult to diagnose (culture) and treat
- Old horses of concern
  - 30 years ago TX had 2000 infected herds
- Public Health concern!
  - Always consider *Brucella* test





# Bovine Tuberculosis (TB) in Texas

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# Characteristics of Bovine TB Infection

- Bacterial
- Chronic
- Slowly progressive tubercles
- Usually clinically inapparent
- Public health impact
- Meat condemnation
- Human infection





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# TB in Texas

- Texas is classified as TB Free by USDA
- There are still lesioned animals found routinely at slaughter (10-15 per year)
  - Primarily Mexican origin feeder cattle
  - FY 2020 there were 9 slaughter traces initiated, 3 of which are still undergoing investigation
  - FY 2022, TX had 3 affected herds still undergoing investigations
- Tracing these animals is time consuming and costly
  - Working on one trace may take multiple years



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# TB Threats to Texas

- Mexican feeder cattle: ~1 million per year
- Mexican exhibition (rodeo) cattle: ~5,000 per year
- US dairy cattle
  - Dairy calf rearing facilities
  - Over 4 million dairy calves raised per year





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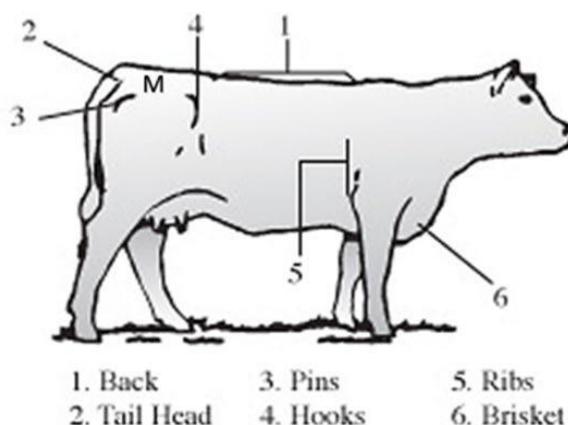
# Mexican Origin Cattle “M-branded”

- “M” brand on the right side of the animal
- Hip for slaughter animals and shoulder for breeding animals

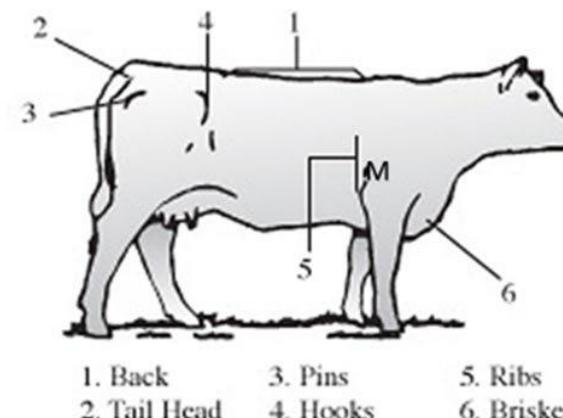
Acceptable “M” Brand



Feeder Steer or Spayed Heifer



Breeding Cattle





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# Mexican origin event cattle Preventative measures in Texas

- All Mexican origin cattle have an M brand on right hip/shoulder
- M-branded rodeo cattle must call TAHC to get entry permit
- Event cattle entering directly from Mexico must have a post-entry test performed by a Texas veterinarian 60 days after entry
- M-brands presented for sale at a market can only be sold to slaughter or for terminal feeding



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# Mexican origin event cattle Preventative measures in Texas

- M-brands presented for sale at a market can only be sold to slaughter or for terminal feeding
- TAHC inspectors check papers on M-brands at rodeos, markets and inspect feed yards



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# Risky Practice

- Resting or grazing Mexican origin steers on pastures with breeding cattle
- Commingling Mexican origin steers with replacement cattle or breeding cattle in feed yards
  - Texas Cattle Feeders developed voluntary guidelines for feeders

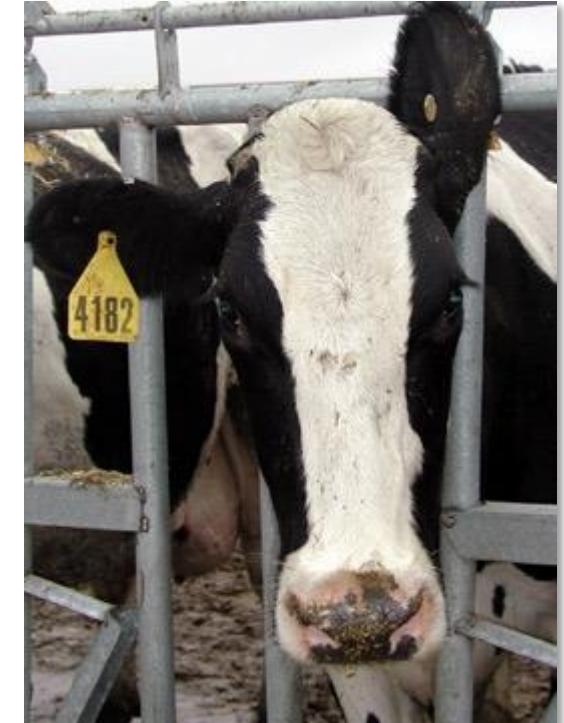




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# Dairy Calf Ranches

- Calf Ranch = Greater than 10 calves
- Prior trouble with TB epi traces involving calf ranches
  - Establishes recordkeeping requirements for both TB testing of calves and records on feed milk sources





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# Dairy Calf Ranches

- High likelihood spread of disease
- Likely co-mingling of animals from different sources
- Smaller operators may be transient
- Dairy Industry support in Texas





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# Dairy Calf Ranch Inspections

- Performed by field inspectors
- Monthly at first until relationship developed
  - Quarterly Inspections after that
- High risk designation will increase inspection frequency
- Regional Veterinarian reviews form for risk factors





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# Dairy Calf Risk Factors

- Rule violation – no ID, entry violation, etc...
- Feeding unpasteurized waste milk/colostrum or no records on milk sources
- Co-mingling or presence of M-brands on facility
- Inability to link tags to source or incomplete record keeping (5 yrs)



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# Calf Ranch Risk Factors

- Out of state sources or unknown sources
- Weak biosecurity processes – hutches, bottles, general health issues
- Any unsanitary practices
- Other factors based on veterinary science or sound epidemiological principles



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# Texas TB Mitigation Processes

- Mandatory ID of all dairy breed animals before movement from farm of origin
- Mandatory TB test for all dairy breeding animals at time of entry (except from Accredited Free herds)
- Calves less than 2 months enter under permit to be tested at 2 months of age





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# Texas TB Mitigation Processes

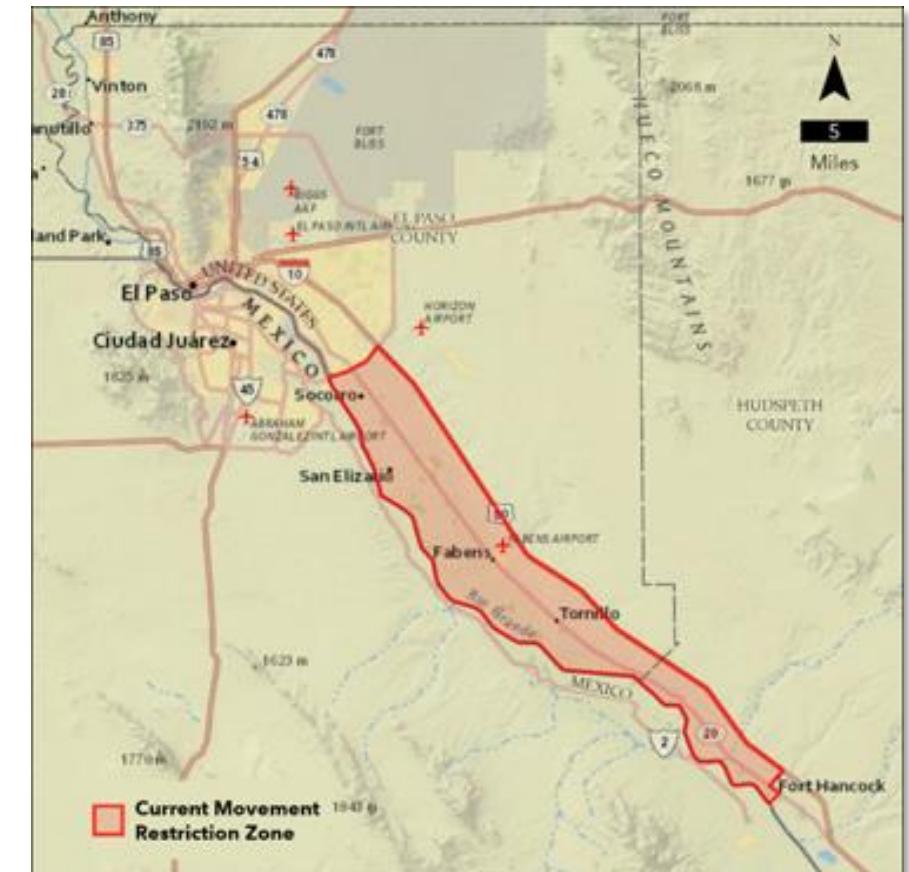
- Voluntary relationship with feeder industry to discourage feeders who may have M-brands fence-to-fence with breeding animals in dry lot
- Calf Ranch Survey process
- Tested all dairies in 2004-2005
- Calf Ranch Survey process
  - Quarantined Calf Ranch Process development



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# El Paso Area TB Surveillance

- HB 1081 – requires TAHC to assess TB in the Movement Restriction Zone established in 2006
- All dairy cattle depopulated
- Statistical sample of small ruminants
- Surveillance testing
  - Coyotes
  - Cervids
  - Feral swine





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# Primary Diagnostic Tests for Cattle TB

- Caudal Fold Tuberculin (CFT) Test
- Single Cervical Tuberculin (SCT) Test (Deer)
- Cervid StatPak and DPP now available for certain species
- Comparative Cervical Tuberculin (CCT) Test
- Interferon Gamma Release Assay (IGRA; "Bovigam")
  - Currently only conducted by USDA at NVSL, Ames, IA
- Idexx ELISA approved, use limited



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# Caudal Fold Test - Intradermal





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# Caudal Fold Test - Intradermal

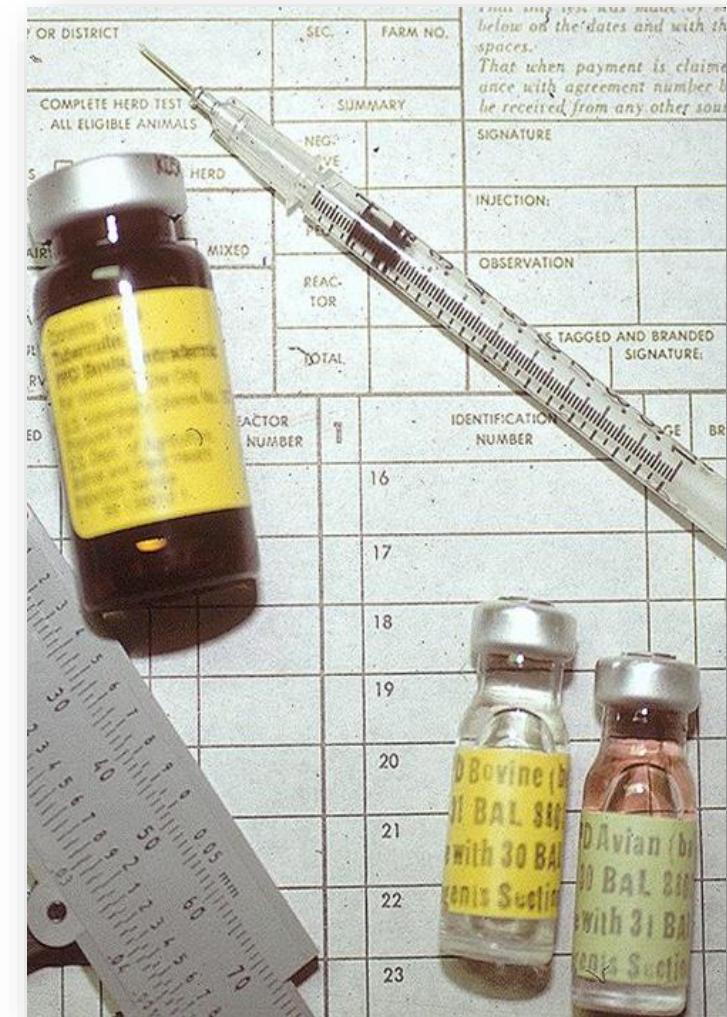




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# Considerations When Using Tuberculin

- Tuberculin injection
  - Must use:
    - 26-gauge 3/8" needle
    - Tuberculin syringe (1ml)
    - Intradermal injections
      - "Bleb" is quality control
- 1-4% false positive rates are expected





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# Considerations When Using Tuberculin

- Do NOT freeze
- Protect from heat and sunlight
- Time interval for observation
  - CFT read at 72 hours post injection (+/- 6 hours)
  - Test to be read ONLY by the veterinarian performing the injection (reader biases exists)
  - Read test by palpation as well as visual observation
- Ordered from NVSL in Ames, IA





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# Comparative Cervical Test (CCT)

- Secondary test:
  - 1) within 10 days after CFT injection
  - 2) more than 60 days after CFT
- Intradermal injection
  - Bovine PPD tuberculin (0.1 ml)
  - Avian PPD tuberculin (0.1 ml)
- Mid-cervical area
- Compare response of two tuberculins (72 hrs +/- 6)
- State or Federal veterinarian administers



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# Interferon Gamma Release Assay (BOVIGAM)

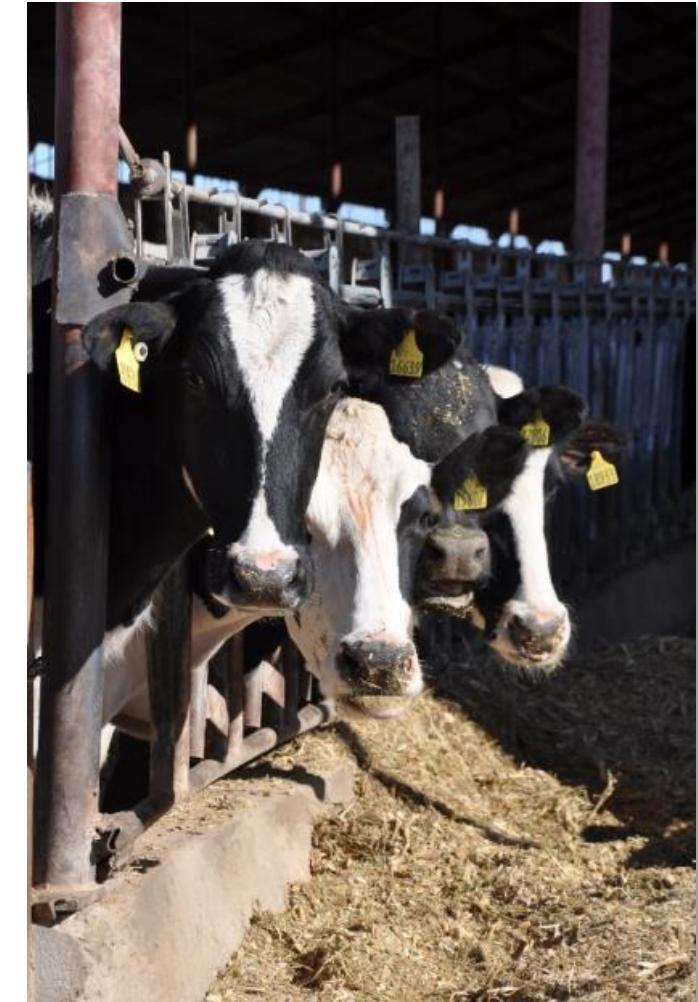
- Must be prescheduled with NVSL
- Collect blood sample < 30 days after CFT test
- Green top tube - whole blood with heparin
- Do NOT chill
- Must arrive in lab < 24 hours post-collection



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# Disposition of test positive cattle

- Responders/Suspects get reported
  - Must be reported to TAHC within 24 hours of observation
- Secondary testing by regulatory personnel must be completed within specific time periods
- CCT Test
  - Reactors – directly to necropsy
  - Suspects – epidemiologist looks at herd risk to make decisions
- BOVIGAM
  - Reactors – directly to necropsy
  - Suspects – retest 7-14 days after initial interferon gamma assay
    - Necropsy if positive a second time





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# Cattle Tuberculosis (TB) Public Health Concern

- TB lesions usually detected at slaughter





# Texas Bovine Trichomoniasis "Trich" Control Program

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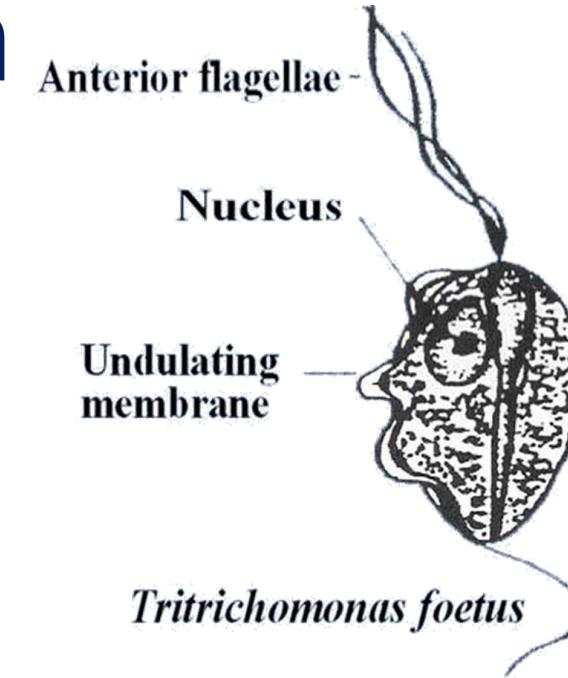




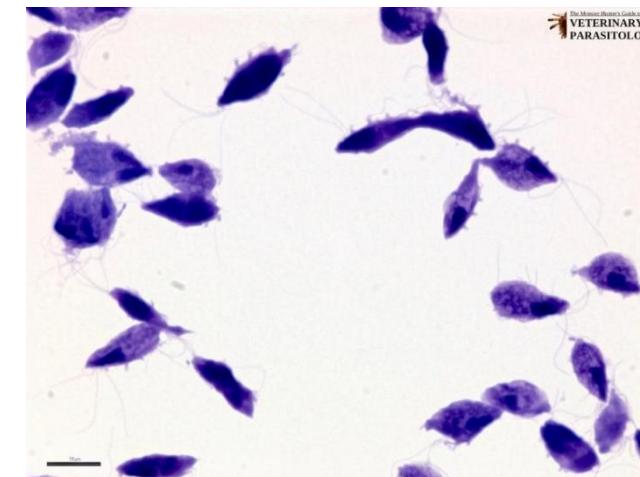
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# Causative Organism

- *Tritrichomonas foetus*:
- A protozoan – mobile, complex, single-celled organism with three flagella at its anterior end
- About the size of a sperm



*Tritrichomonas foetus*



The Merck Veterinary Manual  
VETERINARY  
PARASITOLOGY



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# Bovine Trichomoniasis in Females

- Repeat breeding
- Extended calving season
- Early abortion (too early to find a fetus)
- Occasional late-term abortions
- High percentage of open cows at pregnancy check (20-50 percent or more)
- Pyometra possible (about two percent of cows)





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# Bovine Trichomoniasis in Males

- Infection does not affect semen quality or behavior
- Bulls are an asymptomatic carrier with most infected indefinitely
- Infected bulls serve as a reservoir of infection in a herd





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# Texas Trichomoniasis Program

- Started January 1, 2010
- Industry-driven
- Took best practices from other states
- Control concept (not eradication)
- Veterinarians must be certified, recertified every five years
  - Monthly webinars conducted by TAHC
- Official labs will run regulatory tests





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# Texas Trichomoniasis Regulations

**\*\*Trichomoniasis is a reportable disease\*\***

- Positive test results are reportable to TAHC within 24 hours after diagnosis
- Forward negative test charts to TAHC also
- Test data will help determine the prevalence and distribution of the disease in Texas - invaluable for determining the future direction of the program

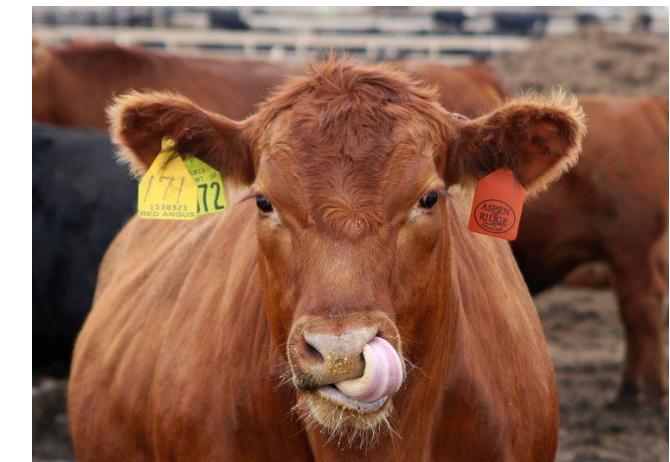


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# Texas Trichomoniasis Regulations

- ID for breeding bulls
  - Breeding bulls **must** be officially identified prior to being certified as a virgin bull
  - Undergoing **sample collection for Trich testing**
    - Metal ear tag (NUES -National Uniform Eartagging System)
    - Official 840 Radio Frequency ID device (RFID) with or without a bangle tag
    - Official individual animal breed registry brand\*
    - Official individual animal breed registry tattoo\*

\*Not acceptable for interstate movement





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# Texas Trichomoniasis Regulations

- Exhibition, Competition & Rodeo Bulls
  - Bulls 12 months or older may enter Texas **WITHOUT** a test provided they:
    1. Have an entry permit
    2. Have a CVI
    3. Are **NOT** commingled with female cattle or used for breeding
  - Must be tested if staying over 60 days or change status





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# Intrastate Movement Requirements

- **Virgin Status Certificate** accepted up to 18 months of age
  - Valid for 60 days
  - Bulls separated from females after issuing certificate
  - Bulls must be breed registered (*new rule Aug 2019*)
  - Bulls from breeding collection facility or late maturing breeds allowed virgins for up to 30 months (certified by breeder and veterinarian, verified that facility does not allow for any female contact)
  - **Veterinarian beware – reports of positive “virgins”!**
- Virgin Status Certificate are NOT for cattle entering Texas from another state



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# Intrastate Movement Requirements

- Bulls required to be tested if **sold, leased, exchanged, gifted or change of possession**
  - 1 negative PCR test
  - Test valid for 60 days
  - Bulls separated from females after testing





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# Interstate Movement Requirements

- Untested bulls allowed to move to the following locations:
  1. Slaughter
  2. Trich certified feedlot prior to slaughter
  3. Livestock auction
    - Sold under a hold order
    - Trich test within 7 days
    - No female exposure
  4. Other physical location under a hold order for testing



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# Official Test Record



## Trichomoniasis Test Record

Accession #

Vet Printed Name		NAN	TVMDL Account #	Specimen Collection Date	Vet Signature	
Vet Address		Vet City / State / ZIP			Vet Phone	Vet Fax
Herd Owner Name		Owner Address			Owner City / State / ZIP	
Physical Location of Animals (County / State)		Ranch Name			PIN / LID	
<b>Reason for Test</b> <input type="checkbox"/> Initial <input type="checkbox"/> ReTest <input type="checkbox"/> Diagnostic <input type="checkbox"/> Herd Cert/Valid. <input type="checkbox"/> Sale or Change of Possession <input type="checkbox"/> 1 Year Post Quar. Test <input type="checkbox"/> Adjacent Herd Test		<b>Test Options - Select ONLY #1, #2, or #3</b> <input type="checkbox"/> <b>#1</b> PCR - Direct Smegma Pooling Requested? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <b>#2</b> Culture - In Pouch Only <input type="checkbox"/> <b>#3</b> PCR - In Pouch Pooling Requested? <input type="checkbox"/> Yes <input type="checkbox"/> No Clinic Incubation? <input type="checkbox"/> None <input type="checkbox"/> 24H <input type="checkbox"/> 48H			Complete herd test of all eligible bulls? <input type="checkbox"/> Yes <input type="checkbox"/> No  Herd Type: <input type="checkbox"/> Dairy <input type="checkbox"/> Beef <input type="checkbox"/> Mixed <input type="checkbox"/> Other (specify)	
					Remarks	
					Pouch Expiration Date:	

\*In the ID Type column, enter the appropriate ID type from the following list: **R** = RFID, **N** = NUES, **BR** = Brand, **T** = Tattoo

LABORATORY USE ONLY

Laboratory Performing Test:	Date Set Up:	Results Summary		
	Date Reported:		PCR	Culture
	Reported By:	Negative		
	Signature:	Positive		
		Total		

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TAHC Form 09-03 (Issued 05/12/2009; Revised 12/20/2022)

Copies must be distributed to: Owner, Veterinarian, Region Office



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# Virgin Status Certificate

- 2 to 3 signatures needed
  - Breeder/representative
  - **Accredited vet**
  - Consignor (if applicable)
- Texas registered bulls can be certified as virgins if:
  - <18 months of age and breeder certifies sufficient management practices to ensure virginity
  - 18-30 months of age and breeder & breeder's veterinarian certifies sufficient management practices to ensure virginity



Texas Animal Health Commission  
Trichomoniasis Virgin Status Certificate

[Clear Form](#)

The animals individually identified with an official identification described below are virgin male bovine under 18 months of age or are between 18 and 30 months of age and breeder's veterinarian certifies that the breeder has sufficient management practices and facilities to ensure animals are virgins (veterinarian signature required). Only bulls located in Texas can be certified as virgin between 18 and 30 months of age. This extension of age does not apply to out of state bulls entering Texas.

The certification by the breeder is valid for sixty (60) days and may be transferred within that timeframe with an original signature of the consignor if there is no contact between the bull(s) and female cattle.

OFFICIAL IDENTIFICATION NUMBERS	AGE	BREED
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Original Breeder/Representative			
Address	Printed Name	Signature	Date
Accredited Veterinarian			
Printed Name	Signature	Date	
Consignor			
Printed Name	Signature	Date	



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# Permit and Hold Order

- Completed by TAHC representative
- Result of any positive diagnostic sample
- Result of movement without required documents



## Texas Animal Health Commission Trichomoniasis Permit and Hold Order

This document is NOT for interstate movement; contact the state of destination for requirements.

PERMISSION IS GRANTED TO:	FOR MOVEMENT OF:	Reset Form
Name	Number of Head of Cattle	
Address	Moving From (Livestock Market / Premises of Sale)	
City / State/ ZIP	State of Origin (if applicable)	
Phone	Moving To (Premises Location)	Premises County

Pursuant to provisions of Chapter 161 of Texas Agriculture Code and Chapter 38 of the Texas Administrative Code, the bull(s) identified herein with permanent official individual identification are granted permission to move to the premises location above for the following reason as designated by the agent/owner.

This permit and hold order must accompany the bull(s) at all times and be provided to a TAHC representative.

<input type="checkbox"/> Official Trichomoniasis testing by an authorized veterinarian.	Vet Name: _____	Location Tested: _____
<input type="checkbox"/> Approved Trichomoniasis Certified Facility.	Facility Name: _____	Facility Address: _____
<input type="checkbox"/> To resell on or before the seventh day after this permit is issued.	Market Name: _____	Market Adress: _____

The bull(s) listed below are hereby placed under a hold order, restricted to the premises location or facility and address designated above, and must be isolated from female cattle at all times.		
OFFICIAL INDIVIDUAL IDENTIFICATION NUMBERS	BREED	AGE
1		
2		
3		
4		
5		

TAHC Destination Office must receive notification of test results to release this Hold Order.		
TAHC Office: _____	Phone: _____	Email: _____

Note: Owner/agent must notify TAHC representative prior to any movement and receive authorization and a new permit to move the bull to any location other than the facility and address designated above. For authorization call \_\_\_\_\_

Owner/Agent Signature	Date	<input type="checkbox"/> <input type="checkbox"/>	TAHC Representative Signature	Date	<input type="checkbox"/> <input type="checkbox"/>
Verified By	Date	<input type="checkbox"/> <input type="checkbox"/>	Executive Director	Date	<input type="checkbox"/> <input type="checkbox"/>

TAHC Form 09-04 (Revised 09/20/2019)

*Andy Schreier, DVM*



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# Positive Test Procedures

**\*\*Trichomoniasis is a reportable disease\*\***

- One positive test = infected bull
- Veterinarian should consult with TAHC upon receipt (24 hours) of positive test results
- Infected bulls & non-virgin bulls on premises placed under hold order
- Positive bulls direct to slaughter or to livestock market for sale to slaughter under a VS 1-27 permit



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# Positive Test Procedures

- Retest of a positive bull must be submitted in writing by owner within 5 days of a positive test result
- Retested bulls need two consecutive negative PCR tests **at least 7 days apart** within 30 days of the initial positive test
- No female exposure during this time
- Bulls on **fence line adjacent properties** to the infected herd shall be tested by 30 days from the date of the letter of notification by the commission



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# Positive Test Procedures

- Negative cohorts to a positive bull need **three negative consecutive culture tests or two consecutive negative PCR tests at least 7 days apart within 60 days of the initial test** to be classified as negative & released for breeding
  - TAHC Rules 38.3(c).
- **All bulls** that are part of a herd **one year after** the date the hold order or quarantine on the herd **was released** are required to be officially tested for Trichomoniasis



# Scabies and Mange Mites

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# Scabies and Mange Mites

- Scabies and Mange Mites reportable to Texas Animal Health Commission:
  - Psoroptic Scabies
  - Sarcoptic Scabies
  - Chorioptic Mange

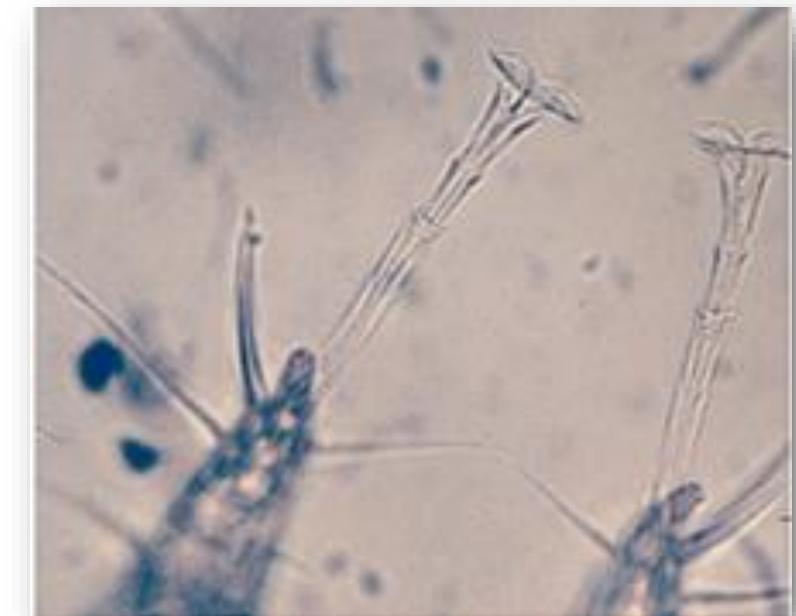




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# Scabies and Mange Mites

- Psoroptic Scabies
  - Trumpet sucker on each leg
  - Legs have 3 segments
  - Head is pointed
  - Cattle, horses, sheep
  - Important in sheep – sheep scab





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# Scabies and Mange Mites

- Sarcoptic Scabies
  - Wiskers on legs
  - Rounded heads
  - Cattle, pigs, sheep
  - Widespread in pigs





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# Scabies and Mange Mites

- Chorioptic Mange
  - Cupped sucker on each leg
  - Legs unsegmented
  - Head rounded
  - Housed dairy cows





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# Scabies and Mange Mites

- Considerations:
  - Request for CVI on an infested or exposed show animal
  - Request for treatment on an infested or exposed show animal
  - Be aware of treatment rules and duration of treatment
  - Seasonal nature (lesions may improve in summer)