

Dairy Calf, BVDv-PI Dead & Chronic Monitoring Program

PURPOSE

Identification and removal of BVDv-PI animals will have a positive impact on herd health.

QUICK OVERVIEW: NEGATIVE IMPACT OF BVDV-PI ON HERD HEALTH CALF RANCH

The constant shedding of BVD virus will result in increased morbidity, decreased productivity and reduced immune function of calves in adjoining hutches and that constant exposure to a BVDv-PI animal when the calves move to group pens can double respiratory morbidity of pen mates.

DAIRY AND DAIRY HEIFER REPLACEMENT OPERATIONS

BVD-PI animals in the herd will result in additional persistently infected (PI) as well as congenitally infected (CI) calves being born.

The constant shedding of BVD virus will result in increased morbidity, decreased productivity and reduced reproduction performance.

RATIONAL FOR TESTING DEAD CALVES

BVDv-PI animals are concentrated at the dead pile.

- 3 4% of cattle that die in the calf ranch are BVD-PI positive. (> 3 per 100 head)
- Prevalence of BVD-PI animals arriving at the calf ranch is only 0.19%. (<2 per 1000 head)

GOAL OF THE MONITORING PROGRAM

Identify the source of the BVDv-PI animals and work with those dairies to identify and remove any BVDv-PI animal form their herds.

VALUE PROPOSITION

Identification and removal of BVDv-PI animals at any stage of production is valuable toward improving overall calf health, however the greatest impact will be to identify and remove BVDv-PI cows from the lactating herd at the source dairies. The preventable losses due to the presence of BVD-PI cows in a dairy herd can range from \$20.00 to \$88.00 per head.

TAKE THE NEXT STEP TO A BVD-FREE HERD

Ensure that you are protecting your animals from the devastating losses associated with the BVD virus by participating in this simple monitoring program with your sample submissions. Within 24 hours after the receipt of samples (Monday-Thursday), you will know if your herd's health is in jeopardy as a result of the virus. Contact us today or visit our website, www. animalprofiling.com, with questions about the Dairy Calf BVD Dead and Chronic Monitoring Program and the information in this packet.

FOR MORE INFORMATION, CONTACT API CUSTOMER SERVICE: 877.278.1344 or sales@animalprofiling.com

ABOUT US

Animal Profiling International, Inc. is an American company dedicated to the improvement of animal health management through risk-assessment technologies.

API's industry experts provide the products and services that operators in the beef, dairy and food supply industries need to make their jobs more efficient and profitable.

The company has tested over 2.5 million head of cattle and dairy animals for BVD and currently services clients in over 40 U.S. states. In addition to BVD testing, the company also provides diagnostic services for the detection of BLV, Johne's disease, Mastitis, Neospora and pregnancy in cattle.



BVD-PI Bulk Tank Milk Monitoring Program

WHAT WILL BVD COST YOU?

- According to 2007 National Animal Health Monitoring Service (NAHMS) data, BVD virus was present in bulk tanks in 12.5% of dairies with over 500 head and 3.5% of dairies with 100-499 head.
- Our current data suggests that Pls are present in 10-25% of U.S. herds depending on region and size of herd.
- Herds in areas where expansion is taking place have higher incidences of infection.
- Estimated loss from BVD in a dairy is \$20-\$88 per cow, per year.

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BOVINE VIRUS DIARRHEA VIRUS CAN CAUSE THREE DISTINCT DISEASE STATES:

- Reproductive: Early embryonic death, Persistently Infected (PI), or a Congenitally (CI) infected calf.
- Respiratory: Immune suppression and Bovine Respiratory Disease (BRD)
- Digestive: Diarrhea
 - 1. PI cows are a constant source of BVD virus being shed to the environment
 - 2. Over 25% of Large Dairies tested have been found to have BVDv-PI Positive animals.
 - 3. BVD-PI cows in a dairy herd can cause loses in the range \$20.00 to \$88.00 per head.

PROGRAM BENEFITS:

- Bulk tank milk samples can be used to screen large dairies to identify herds with a lactating PI cow.
- String samples can be used to narrow the search to specific groups minimizing individual testing.
- Next business day results reporting minimizes time for "clean-up" process

ESTIMATED PREVENTABLE LOSSES DUE TO THE PRESENCE OF BVD-PI COWS ON THE DAIRY.

	100 COWS	500 COWS	3,500 COWS	7,000 COWS
Conservative \$20.00 per head	\$2,000.00	\$10,000.00	\$70,000.00	\$140,000.00
Median \$50.00 per head	\$5,000.00	\$25,000.00	\$175,000.00	\$350,000.00

INVESTMENT

The investment associated with utilizing bulk tank samples to monitor a dairy is minimal for submitting three samples per year with up to 3,500 cows represented per sample.

- Bulk Tank Milk Samples: \$45 per sample (up to 3,500 head per sample)
- Individual testing pooled PCR: \$2.40 per head; confirmation of positives: \$1.95

EXAMPLE OF IDEAL LARGE DAIRY CLEANING UP

Dairy	State	Size	Date	Sample	Sample #	Positive	Cost
My milk	ID	5000	11/5/2013	Bulk Milk	3	1	\$135.00
			11/8/2013	String Milk	10	1	\$450.00
			11/14/2013	Ear Notch	173	1	\$473.70
			12/20/2013	Bulk Tank	3	0	\$135.00
\$0.18/per h	ead		10 Days				\$893.00

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BVD-PI Dairy Testing Strategy

WHAT WILL BVD COST YOU?

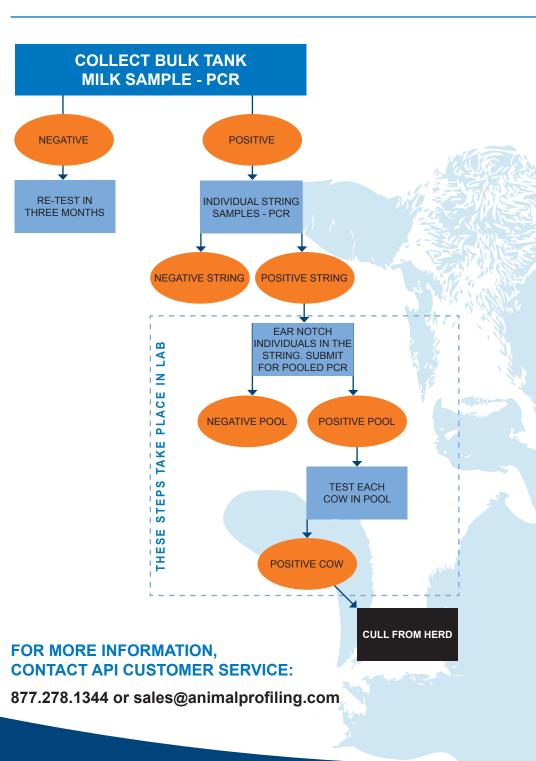
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The Negative Impact of BVD-PI Animals Trial Result Summary & Supporting Data



AMERICAN VETERINARY MEDICAL ASSOCIATION TRIAL SUMMARY

The January edition of the Journal of American Veterinary Medical Association included the article, "Effect of constant exposure to cattle persistently infected with bovine viral diarrhea virus on morbidity and mortality rates and performance of feedlot cattle" JAVMA, Vol. 244, No. 2, January 15, 2014.

The summary of three companion trials provides additional insight into the negative impact that BVDv-PI animals can have on their pen-mates.

<u>Trial 1</u>

Trial 1 evaluated the effect of constant PI exposure or PI non-exposure to BVD naive calves in the feed lot. Naïve calves were either vaccinated with a multivalent modified live respiratory vaccine within 24 hours of arrival or not vaccinated at arrival. Recorded values represent the percentage of the calves that were diagnosed with bovine respiratory disease and treated at least once.

1a Vaccinated on arrival / No BVDv-PI exposure

1b Not Vaccinated / No BVDv-PI exposure

1c Vaccinated on arrival / BVDv-PI exposure

1d Not Vaccinated / BVDv-PI exposure

19.57% (no PI in feedlot pen) 30.43% (no PI in feedlot pen) **39.13% (PI in feedlot pen)** 63.04% (PI in feedlot pen)

Since almost all calves are vaccinated on arrival at the feedlot the two treatments of practical interest are 1a and 1c.

Trials 2 & 3

Trials 2 and 3 compared the effects of pre-weaning vaccination or pre-weaning exposure to BVDv-PI in calves that were subsequently exposed to BVDv-PI cattle throughout the feeding period.

2a Vaccinated w/ BVDv-PI exposure pre-weaning 2b Not Vaccinated w/ BVDv-PI exposure pre-weaning 2c Vaccinated w/ no BVDv-PI exposure pre-weaning 2d Not Vaccinated w/ no BVDv-PI exposure pre-weaning 3a Vaccinated pre-weaning 3b Not Vaccinated pre-weaning 43.24% (PI in feedlot pen) 42.31% (PI in feedlot pen) 56.76% (PI in feedlot pen) 63.16% (PI in feedlot pen) 32.83% (PI in feedlot pen) 42.25% (PI in feedlot pen)

Conclusions:

- 1. Both Vaccination and natural exposure to BVDV can reduce the negative impact of constant exposure to a BVD-PI animal in the feedlot.
- 2. Constant exposure to a BVD-PI animal in the feedlot can increase BRD Morbidity by a factor of 2 in vaccinated animal and a factor of 3 in non-vaccinate or non-exposed animals.

Undetected BVD-PI animals constantly shedding virus in your operations will in most cases cause an increase in respiratory disease as demonstrated in the trial summary above but will also result in decreased reproductive efficiency and suppression of the immune system.

Continued on next page.

For questions, contact: API Sales (877) 278-1344, API Lab (503) 972-3041 or sales@animalprofiling.com Headquarters: 6040 N. Cutter Circle, Suite 317, Portland, OR 97217 <u>www.animalprofiling.com</u>

NAHMS 2007 SUMMARY DATA

In 2007, NAHMS bulk milk tank tested 527 dairies across the U.S. and found a 1.7% positive rate over all, with large dairies (>500 hd) positive 12.8% of the time with a higher percent in Western Dairies (7.7%) vs Eastern Dairies (1.1%). Small dairies (< 100) had 0 positives and medium dairies (100-499) were 3.5% positive.

ANIMAL PROFILING INTERNATIONAL 2013 SUMMARY DATA

During 2011-2013 in conjunction with Merck Animal Health we undertook a similar bulk milk tank testing program targeting mostly larger dairies (>500 hd) from Vermont to California and found that the incidence has increased. The sample included 182 dairies of which 18% were positive (33/182) including 118 large dairies (>500 hd) where 28% (33/118) were positive. A sample of dairy calves tested on arrival at several calf ranches during 2013 was 0.20% (362/177,535).

Estimated efficiency of a BVD-PI "Deads" monitoring program in a 40,000 head capacity operation.

- 40,000 head x 0.20% = 80 PI animals undetected.
- 40,000 head x 2% mortality = 800 deads x 3.93% PI prevalence in deads = 31 head PI animals identified.
 31 identified PI's with 80 PI's in the calves equals <u>39%</u> efficiency rate.
- 40,000 head x 3% mortality = 1200 deads x 3.93% PI prevalence in deads = 47 head PI animals identified.
 47 identified PI's with 80 PI's in the feedlot equals <u>59%</u> efficiency rate.

The efficiency of finding BVDv-PI animals at the calf facility will be enhanced by also including "chronic" animals in the program.

Animal Profiling International, Inc. **Client Information and Sample Submission Form**



Operation Name:						
Contact Name:	Last		First	M.I.		
Billing Address:	Last		T inst	101.1.		
2	Street Address					
	City		State	ZIP Code		
Office Phone:	() Mobile Phone: ()					
Office Fax #:	()	E-m	ail Address:			
Operation Type:	Seedstock	Cow-calf Grower/Fe	edlot Dairy Calf Ran	ch Alpaca		
Send Results: (circ	le one) Fax	E-mail	Results will be	emailed or faxed to you the next		
Invoice to: (circle or	e) Operation	Vet		ay after samples are received.		
VETERINARIAN	INFO					
Veterinarian Nam	e:		Clinic Name:			
Veterinarian Addr	ess:					
Veterinarian Phor	ne: ()	Veter	narian Fax: ()			
Veterinarian Ema	il:					
			4			
IEST TTPE: BVD	Select test to run. Indicate nu	-	Ear Notch ELISA			
BVD	Ear Notch PCR	Blood (whole/serum) PCR	calves greater than 30 days old	Bulk Milk PCR		
	NE'S DISEASE, BI V. NEOS	SPORA Select test to run	Indicate number of samples under	selection		
	Milk Test (ELISA)	Serum Test (ELISA)	Bulk Milk (ELISA)	7		
JOHNE'S DISESASE				-		
BLV				-		
NEOSPORA	N/A		N/A			
TEST TYPE: PRE	GNANCY Select test to run.	Indicate number of samples u	nder selection	_		
EARLYPREG28	Blood Whole/Serum	EASYPREG	Milk	_		
TEST TYPE: MAS	TITIS Select Sample Source,	then Option A or Option B				
SAMPLE SOURCE	(select one)					
Individual test	sample(s) # of samples		Bulk milk sample(s) # d	of samples		
OPTION A: BIG 16 (Contagious and Environmental)			OPTION B: CONTAGIOUS 3			
Test identifies: Staphylococcus aureus, Staphylococcus spp. (including all major coagulase-negative staphylococcu), Streptococcus agalactiae, Streptococcus dysgalactiae, Streptococcus uberis, Escherichia coli, Mycoplasma bovis						
	including E. faecalis and E. faecium), Klebsiella s tia marcescens, Corynebacterium bovis, Arcano					

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(Peptostreptococcus) indolicus, Staphylococcal ß-lactamase gene (penicillin-resistance gene), Mycoplasma bovis,

Mycoplasma spp., Yeast, Prototheca spp.

Shipping Information BVD Control/Surveillance Testing



SHIPPING PROCEDURES

Monday through Thursday Shipments

- Place samples and ice pack in insulated envelope or bag prior to packing in box during hot weather.
- Samples should be wrapped tightly and sealed to avoid samples being loose in the box.
- Include client form with shipment.

Shipping Methods

UPS, FedEx, DHL, U.S. Postal Service "Express" or Priority

Important!

With a two-day shipment (U.S. Postal Service Priority Mail[®] or 2nd Day UPS or FedEx), it is best to mail on Monday, Tuesday or Wednesday. Samples mailed on Thursday or Friday will not be delivered until Monday.

SEND TO:

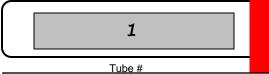
Animal Profiling International, Inc. 6040 North Cutter Circle, Ste. 317 Portland, OR 97217

Phone: 503-247-8066

BVD PI Submission List



Side of Redtop tube



animal number written on the abact only not on the type			ageof Date: peration/Owner:
Tube #	Animal ID #	Tube #	Animal ID #

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Supply Order Information & Quick Start Guide BVD Control/Surveillance Testing



For questions and packet orders, please contact:

API

Phone: 877.278.1344 Email: sales@animalprofiling.com www.animalprofiling.com TUBES

MWI Veterinary Supply Co.: BLD COL TUBE 5CC RED NO Item Number: 002402

Animal Health International: BLOOD TUBE-RED 5ML EACH 301413 *Item Number: 21241406*

SUPPLY ORDER INFORMATION

EAR NOTCHERS

MWI Veterinary Supply Co.: EAR NOTCHER V SMALL

Item Number: 023373

Animal Health International: EAR NOTCHER SMALL V 140020 Item Number: 21121511

Your veterinarian can order supplies from MWI Veterinary Supply Co. (MWI) or Animal Health International (AHI):

MWI Veterinary Supply Co. Phone: 800.824.3703 www.mwivet.com

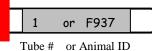
COLLECTION PROCEDURES

Phone: 800.203.5620 www.animalhealthinternational.com

Animal Health International (AHI)

1. Label tubes with a permanent marker and record corresponding animal ID on the submission list page. *This facilitates ease of recording and accuracy.*

Correct tube labeling method >



2. Take the ear notch sample from the animal and place the sample in the dry tube prepared in step #1 above. (Do not place in formalin or PBS). Be consistent where the notch is taken. The top outer third of the ear is preferred.



< Preferable notch site of ear



< Approximate size of notch

- 3. Keep notcher clean and free of blood and hair buildup. Rinse excess blood and hair off of notcher as needed.
- 4. Disinfect notcher in between animals. Rinse notcher in mild disinfectant and again in clean water prior to taking notch from the next animal.
- 5. Notch can be handled with bare hand to place in tube.
- 6. Maintain collected samples in a cooler with ice packs or in freezer prior to shipment.
- 7. Samples can be frozen immediately after notching and tested within 30 days of time of collection.
- 8. When shipping, seal tubes in plastic bag before placing in the shipping box.
- 9. Place plastic bag with tubes in box. No ice packs required.
- 10. Place client information and sample list form inside the box.



Milk from the bulk tank or string samples can be used to screen herds for the presence of a persistently infected (PI) BVD animal in the milking string. Bulk tank samples can be taken from up to 3500 cows and should be repeated quarterly to make sure all cows are represented in the milking string throughout the year. Sample should be from a well-agitated bulk tank and from the first milking. When string sampling, pens should be under 400 head and all animals should be inventoried accurately to make sure if a positive sample is found, the proper cows can be tested individually to find a PI. Preserved samples may be used for testing and shipped without icepacks. Bulk tank/string sample testing is an excellent tool to monitor and maintain your herd free of adult PIs.

MATERIALS NEEDED:

- 1. Approximately 10 ml of milk.
- 2. Leak proof plastic container.
- 3. Shipping container with ice packs. Note: Ice packs are not necessary if you are shipping preserved milk.

COLLECTION PROCEDURE:

- 1. Write date and # of animals on tube.
- 2. Ideally collect from first milking and maintain records of cows in string.
- 3. Include sample from hospital and fresh pens.
- 4. Maintain collected samples in a cooler with ice packs or in freezer prior to shipment. *Note: Ice packs are not necessary if you are shipping preserved milk.*
- 5. Samples can be frozen right after collection to accommodate multiple samples on multiple days.
- 6. Include "Client Information and Sample Submission Form" with each shipment.

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