

# ARSENAL<sup>®</sup> 4.1 IS THE ONE!

## The challenge:

- Bovine viral diarrhea (BVD) virus causes respiratory disease.
- BVD also causes immunosuppression, setting up calves for infection from bacterial killers such as *Mannheimia (Pasteurella) haemolytica*.
- BVD reduces productivity and limits profits.
- Most respiratory outbreaks involving BVD are caused by the **noncytopathic (NCP) BVD strains**.
- NCP is always the cause of persistently infected (PI) calves.

## The response:

- Arsenal 4.1 helps prevent disease caused by BVD Types 1 and 2, IBR, PI<sub>3</sub> and BRSV.
- Arsenal 4.1 responds to today's emerging BVD challenge – NCP BVD.
- Arsenal 4.1 protects against clinical signs of BRSV in one SubQ dose.
- Arsenal 4.1 provided outstanding protection against a tough BVD Type 2 challenge that killed 25 percent of the control calves.
- Arsenal 4.1 was proven in field trials to be safe in dairy calves as young as two weeks of age.
- Arsenal 4.1 is smooth – it won't cause sweats or set back animals.
- Arsenal 4.1 has little effect on milk production.



## Arsenal 4.1 withstands “killer” BVD Type 2 challenge

BVD Type 2 post-challenge results

Number of Animals/Total					
	Temp (≥103.5°F)	Clinical Signs	Mortality	Leukopenia (Drop in white blood cells)	Virus Shedding
<b>Vaccinate</b>	0/20	0/20	0/20	1/20	0/20
<b>Control</b>	9/12	12/12	3/12	10/12	7/12
<b>P Value*</b>	<0.0001	<0.0001	0.0444	<0.0001	0.0002

\* A p value ≤0.05 is considered statistically significant.

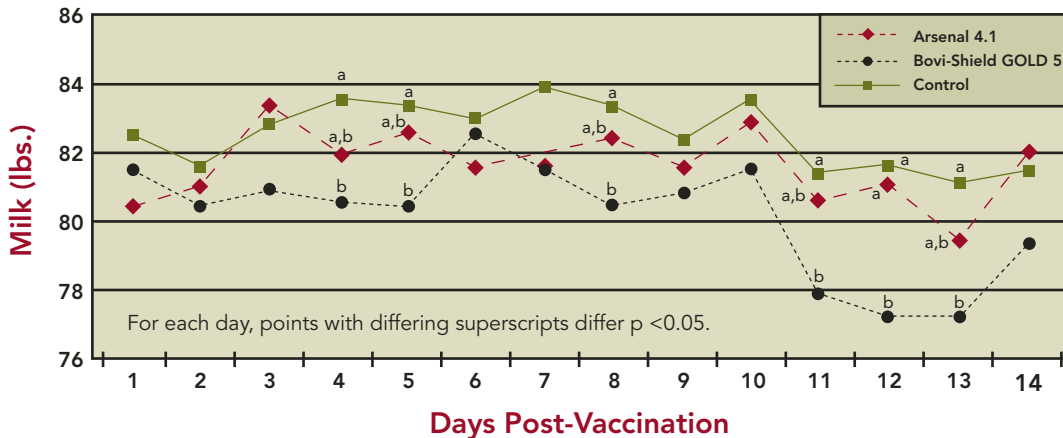
Protocol:

- 20 vaccinates and 12 non-vaccinated controls
- 750- to 1,000-pound yearlings
- 4-mL dose of virulent BVD Type 2 USDA-approved challenge administered intranasally at 21 days post-vaccination
- Yearlings observed two days prior through 14 days post-challenge

## Arsenal 4.1 has little effect on milk production

A field trial compared the effect of sterile water and two commercially available modified live virus vaccines – Arsenal 4.1 and Bovi-Shield® GOLD™ 5 – on milk production. Milk production by treatment group for the 14-day post-vaccination period is illustrated below. There was no significant difference between Arsenal 4.1 vaccinates and the control cows. The lower milk production for the Bovi-Shield GOLD 5 vaccinates vs. controls was statistically significant.

### Least squares means daily milk production post-vaccination



#### Protocol:

- 259 Holstein cows vaccinated according to label directions
- 86 in Arsenal 4.1 group, 87 in Bovi-Shield GOLD 5 group, 86 in control group (2-mL sterile saline SubQ)
- Animals were open, 40 to 357 days in milk and in good health
- Daily milk production recorded for each animal, five days prior to vaccination and 14 days after vaccination

## Arsenal 4.1 usage in dairy cattle

	Arsenal 4.1
Weaning	X
Growing heifers	X
*Pre-breeding	X
Post-freshening	X

\* Open heifers and cows should be vaccinated 30 days prior to the start of breeding.



## Compare – Arsenal 4.1 stands alone:

	Arsenal® 4.1	Bovi-Shield® GOLD™ 5	Pyramid® 5	Titanium® 5
Type 1 and Type 2 protection	X	X	X	X
Contains NCP BVD	X			
One dose BRSV	X		X	
SubQ only	X			



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