

TECHNICAL PAPER

RESEARCH SUMMARY

FeedARMOR™ effectively mitigates viral transmission via contaminated feed in swine.



FEEDARMOR™

OBJECTIVE

Evaluate the efficacy of various inclusion rates of FeedARMOR at reducing the risk of infection following consumption of feed contaminated with PRRSV 144 L1C, PEDV and SVA (Seneca Valley Virus).

Trial conducted by Pipestone Applied Research under the oversight of Dr. Scott Dee as Principal Investigator.

EXPERIMENTAL DESIGN/TREATMENT GROUPS

Five rooms, each with a dedicated feed bin, were used consisting of 6 pens and 15 animals per room.

ROOM	TREATMENT	PRODUCT
2	6.5 lbs/ton inclusion (Positive control)	Formaldehyde
3	2 lbs/ton inclusion	FeedARMOR
4	4 lbs/ton inclusion	FeedARMOR
5	6 lbs/ton inclusion	FeedARMOR
6	Negative control	Basal diet

DESCRIPTION

Cull sows and gilts from a PRRSV, PEDV and SVA-naive Pipestone-managed farm were used for the trial. Diets were corn and soy based, formulated to standard industry levels for a sow gestation diet. Each treatment was applied to this basal diet replacing ground corn. Animals were delivered to biosafety level 2 research barn (RB6) on November 11, 2024.

CHALLENGE PROCEDURE

Viral challenge of feed involved the use of an "Ice Block Challenge Model", which consisted of 100 mL SVA (5 logs TCID50/mL, Ct = 20.72), 100 mL PRRSV 144 L1C (5 logs TCID50/mL, Ct = 21.38), 100 mL PEDV (5 logs TCID50/mL, Ct = 24.25), balanced with 154 mL MEM (4). Blocks were frozen at -80°C and were dropped into each feed bin on days 0 and 5 of the study. The blocks melted, with liquid permeating the feed, forming a "viral hot spot", feed was augured into each room which sows consumed via natural feeding behavior.

CHALLENGE RESULTS

DAY	TREATMENT GROUP	FEEDER SAMPLES (SWIFFER®)			ORAL FLUID SAMPLES		
		PRRSV 144 L1C	PEDV	SVA	PRRSV 144 L1C	PEDV	SVA
0	6.5 lbs/ton Formaldehyde	—	—	—	—	—	—
	2 lbs/ton FeedARMOR	—	—	—	—	—	—
	4 lbs/ton FeedARMOR	—	—	—	—	—	—
	6 lbs/ton FeedARMOR	—	—	—	—	—	—
	Negative control	—	—	—	—	—	—
5	6.5 lbs/ton Formaldehyde	+	+	+	—	—	—
	2 lbs/ton FeedARMOR	+	+	+	—	—	—
	4 lbs/ton FeedARMOR	+	+	+	—	—	—
	6 lbs/ton FeedARMOR	+	+	+	—	—	—
	Negative control	+	+	+	—	+	+
12	6.5 lbs/ton Formaldehyde	+	+	+	—	—	—
	2 lbs/ton FeedARMOR	+	+	+	—	—	—
	4 lbs/ton FeedARMOR	+	+	+	—	—	—
	6 lbs/ton FeedARMOR	+	+	+	—	—	—
	Negative control	+	+	+	+	+	+
27	6.5 lbs/ton Formaldehyde	—	—	—	—	—	—
	2 lbs/ton FeedARMOR	—	—	—	—	—	—
	4 lbs/ton FeedARMOR	—	—	—	—	—	—
	6 lbs/ton FeedARMOR	—	—	—	—	—	—
	Negative control	—	+	+	—	+	+

Day = from first ice block drop. | * Clinical signs of disease detected. | (—) = PCR negative. | (+) = PCR positive.

RESEARCH SUMMARY

- The challenge model was effective, successfully transporting all 3 viruses through the feed into all rooms
- In the absence of a feed mitigant, PEDV, SVA and PRRSV infection occurred and clinical signs of all 3 diseases were observed
- The feed mitigants tested in this trial equally prevented infection and clinical disease across 3 significant viruses of pigs, despite evidence of viral RNA in feed, which suggests that sterilization of feed may have occurred
- Under the conditions of this study, FeedARMOR, independent of inclusion rate, should be considered equivocal to formaldehyde in its ability to effectively mitigate the risk of viral infection via feed



FEEDARMOR™