

RESEARCH BRIEF

2018 North American VevoVitall® Nursery Pig Performance Research — 10-trial summary¹⁻²

VevoVitall®
benzoic acid

Objectives

Evaluate the performance impact that VevoVitall® has on nursery pigs compared to rations that do not include an acidifier*.

Key study results

On a weighted average**, VevoVitall typically delivers the following performance impacts on weaned pigs during their first 28 days post-weaning:

- 6.1% improvement in average daily gain (ADG)
- 2.9% improvement in average daily feed intake (ADFI)
- 2.6% improvement in feed conversion (F/G)

Background

DSM has developed an ultra-pure form of benzoic acid (VevoVitall) that, when used as a feed acidifier, enhances nutrient digestibility in nursery pigs. The ten trials in this summary were performed under a range of conditions to evaluate the effectiveness of VevoVitall in nursery pigs. Some of the unique characteristics of the trials include:

- **HEALTH STATUS** – Eight of the ten trials involved pigs with “High” health status. The other two included pigs with “Average” health status
 - “High” health status – the observed performance exceeded that which is typical for commercially-raised pigs during this growth period
 - “Average” health status – the observed performance was representative of healthy, commercially-raised pigs growing relatively well during this period
- **INITIAL WEIGHT** – The lowest average initial weight was 12.9 lbs./pig and the highest was 16.7 lbs./pig
- **TRIAL LENGTH** – The shortest trial length was 14 days and the longest was 49 days
- **DIETS** – Five of the trials included “Phase 1” treatment and control diets that were high nutrient density, including whey, fish meal and/or red blood cells. Five of the trials only fed “Phase 2 or 3” treatment and control diets with relatively lower nutrient densities. Two of the trials (six and nine) only tracked overall performance numbers so, as a result, are not included in the breakout of results by Phase 1 and Phase 2 or 3 diets.
- **FINAL BODY WEIGHT (BW)** – The lowest average final body weight was 24.7 lbs./pig and the highest was 75.6 lbs./pig

10-trial overview

Ten individual trials involving over 4,000 pigs were conducted under a wide range of conditions at university and commercial settings between 2013 and 2018. The studies were designed to evaluate the impact of adding VevoVitall, an ultra-pure form of benzoic acid, to starter rations at 0.5% inclusion rate. The following parameters were evaluated:

- ADG in pounds of live weight gain per head per day
- ADFI in pounds of feed per head per day
- F/G in pounds of feed per pound of live weight gain

TEN | **4,000+** | **BETWEEN**
INDIVIDUAL TRIALS | PIGS  | 2013- 2018

*Only trial 10 had an acid in the control diet. All other control diets were not acidified.

**Trial result averages weighted based on the number of pigs in each trial.

Summary results

Table 1. Summary of 10-trial results

Parameters	Phase 1	Phase 2/3	Overall
ADG	1.1% improvement	6.3% improvement	6.1% improvement
ADFI	1.1% decrease	3.4% increase	2.9% increase
F/G	1.9% improvement	2.4% improvement	2.6% improvement

Table 2. Individual overall trial results

Trial	Location	Pigs	Health Status	Initial BW, lb.	Days	Overall ADG vs. Control			Overall ADFI vs. Control			Overall F/G vs. Control			Final BW, lb.			
						VV	C	% difference	VV	C	% difference	VV	C	% difference	VV	C	% difference	
1	University	280	High	15.4	28	0.90	0.88	2.3%	1.35	1.31	3.1%	1.51	1.50	0.7%	40.5	40.1	1.0%	
2	University	240	High	16.1	28	0.98	0.94	4.3%	1.44	1.40	2.9%	1.47	1.49	-1.3%	43.6	42.6	2.3%	
3	University	140	High	15.2	28	0.80	0.82	-2.4%	1.26	1.26	0.0%	1.57	1.54	1.9%	37.7	38.3	-1.6%	
4	University	864	Avg.	12.9	14	0.81	0.66	22.7%	1.00	0.90	11.1%	1.23	1.36	-9.6%	24.7	22.3	10.8%	
5	University	900	High	16.3	28	0.89	0.89	0.0%	1.41	1.42	-0.7%	1.59	1.61	-1.2%	41.4	41.6	-0.5%	
6	Commercial	368	High	13.2	42	0.94	0.93	1.1%	1.37	1.38	-0.7%	1.47	1.47	0.0%	52.5	52.7	-0.4%	
7	Commercial	414	High	13.9	42	1.14	1.10	3.6%	1.55	1.53	1.3%	1.37	1.39	-1.4%	61.8	61.0	1.3%	
8	Commercial	936	High	13.1	49	1.26	1.24	1.6%	1.88	1.88	0.0%	1.49	1.51	-1.3%	75.6	74.3	1.7%	
9	University	96	High	13.7	42	1.16	1.09	6.4%	1.79	1.79	0.0%	1.54	1.64	-6.1%	62.2	59.3	4.9%	
10	University	200	Avg.	16.7	21	1.06	0.96	10.4%	1.46	1.32	10.6%	1.35	1.34	0.7%	38.6	36.6	5.5%	
Total Pigs: 4,438																		
Weighted averages					14.3		1.0	0.95	6.1%	1.44	1.41	2.9%	1.44	1.48	-2.6%	48.45	47.48	3.0%

Highlighted cells designate VevoVital treatment advantage.

Table 3. Individual trial results by feeding phase

Trial	Location	Phase 1 diets (0-14 days)									Phase 2/3 diets (End of Phase 1 to study completion) ^{††}								
		ADG			ADFI			F/G			ADG			ADFI			F/G		
		VV	C	% difference	VV	C	% difference	VV	C	% difference	VV	C	% difference	VV	C	% difference	VV	C	% difference
1	University	0.52	0.51	2.0%	0.75	0.76	-1.3%	1.49	1.53	-2.6%	1.28	1.26	1.6%	1.94	1.87	3.7%	1.53	1.49	2.7%
2	University	0.66	0.64	3.1%	0.91	0.89	2.2%	1.38	1.40	-1.4%	1.30	1.25	4.0%	1.96	1.92	2.1%	1.52	1.54	-1.3%
3	University	0.52	0.54	-3.7%	0.74	0.76	-2.6%	1.43	1.41	1.4%	1.05	1.06	-0.9%	1.71	1.70	0.6%	1.63	1.60	1.9%
4	University										0.81	0.66	22.7%	1.00	0.90	11.1%	1.23	1.36	-9.6%
5	University										0.89	0.89	0.0%	1.41	1.42	-0.7%	1.59	1.61	-1.2%
6	Commercial [†]																		
7	Commercial	0.85	0.82	3.7%	1.06	1.06	0.0%	1.26	1.30	-3.1%	1.49	1.46	2.1%	2.15	2.12	1.4%	1.45	1.45	0.0%
8	Commercial	0.82	0.82	0.0%	0.94	0.96	-2.1%	1.15	1.17	-1.7%	1.59	1.57	1.3%	2.58	2.57	0.4%	1.62	1.64	-1.2%
9	University [†]																		
10	University										1.06	0.96	10.4%	1.46	1.32	10.6%	1.35	1.34	0.7%

Highlighted cells designate VevoVital treatment advantage.

[†]Feeding phase data not collected.

^{††}Studies without Phase 1 data were started after a Phase 1 period on a common diet.

Key points

- Results indicate that the performance benefits were strongest in the Phase 2/3 periods and overall
- Responses were greater when conditions provided “Average” health rather than “High” health

¹Trials 1-5 - Nemecek, J. E. 2014. Effects of Pelleting and Dietary Fat and Fiber Levels on Pig Growth and Fat Quality (Doctoral Dissertation). Kansas State University, Manhattan, KS.

²Trials 6-10 - References available upon request.

VevoVital is a trademark of DSM Animal Nutrition and Health.
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