



Research ties sow Vitamin D intake to progeny performance

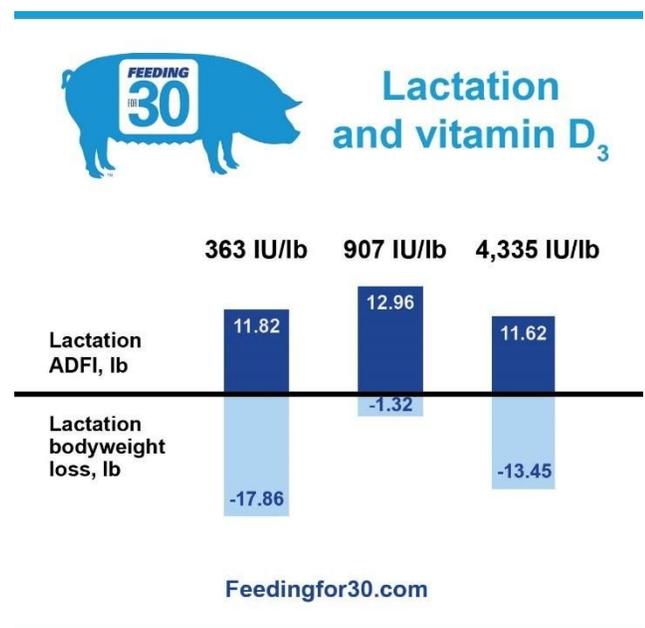
Beyond skeletal and muscular health, vitamin D plays a role in sow and pig productivity.

Shoreview, Minn. [September 29, 2016] – Pork producers who want to get the most out of every ingredient in a sow diet can look to new research showing the value of supplementing vitamins at optimal levels. The most recent research, supported by DSM Nutritional Products and carried out at Kansas State University, shows that an optimum level of vitamin D₃ supplementation in the sow diet can measurably impact the performance of sows and their progeny. Additionally, the research shows a higher level of vitamin D₃ supplementation doesn't always support more benefits. For some criteria, the sows and their progeny performed best when the sows were fed an "optimum" rather than a high level of vitamin D₃.

"We are seeing growing evidence that supplementing a sow's diet with an optimal level of vitamin D₃ can support her improved performance, as well as the lifetime performance of her progeny," says Jon Bergstrom, Ph.D., senior technical support manager for DSM Nutritional Products. "It is important to note 'optimal' doesn't mean 'as much as possible.' We have tested varying levels of vitamin D₃ supplementation, and the data is showing a moderate level of vitamin D₃ supports better performance and growth than a higher or lower level."

The three levels of vitamin D₃ supplementation compared in the study^{1,2} included:

- 363 IU/lb (800 IU/kg), which is the vitamin D₃ requirement recommended for sows by the NRC (2012) to prevent vitamin D deficiency.



¹ Flohr, J. R.; Woodworth, J. C.; Tokach, M. D.; Dritz, S. S.; Goodband, R. D.; DeRouchey, J. M.; and Bergstrom, J. R. (2015) "Evaluating the Impact of Maternal Vitamin D Supplementation on Sow Performance, Serum Vitamin Metabolites, Neonatal Muscle and Bone Characteristics, and Subsequent Pre-weaning Pig Performance," *Kansas Agricultural Experiment Station Research Reports*: Vol. 1: Iss. 7. <http://dx.doi.org/10.4148/2378-5977.1128>

² Flohr, J. R.; Woodworth, J. C.; Tokach, M. D.; Dritz, S. S.; Goodband, R. D.; DeRouchey, J. M.; and Bergstrom, J. R. (2015) "Evaluating the Effects of Maternal Vitamin D Supplementation on the Subsequent Growth Performance and Carcass Characteristics of a Subsample Population of Growing Pigs," *Kansas Agricultural Experiment Station Research Reports*: Vol. 1: Iss. 7. <http://dx.doi.org/10.4148/2378-5977.1129>

- 907 IU/lb (2,000 IU/kg), which is the upper level of the range DSM recommends for sow supplementation (1,500 to 2,000 IU/kg).
- 4,355 IU/lb (9,600 IU/kg), which is a high level of vitamin D₃ supplementation believed to be safe for sows.

Lactation and vitamin D₃

A sow's nutrient needs are three times higher during lactation than at other times in her production cycle. The research supported vitamin D₃ supplementation as a tool to meet the sow's nutrient needs.

Results showed sows fed the 907 IU/lb of Vitamin D₃ more successfully maintained body condition during lactation. In addition, the research showed sows fed the 907 IU/lb of Vitamin D₃ had the greatest average daily feed intake (ADFI) during lactation. The lowest ADFI was measured in sows supplemented with the highest vitamin D₃ level.

"This research showed 907 IU/lb of supplemental vitamin D₃ supported greater lactation feed intake and reduced sow weight loss. Not only were the sows eating more to nourish their pigs, but also they were maintaining body condition, which can improve subsequent reproduction and the pigs produced in the sows' lifetimes," says Bergstrom.

Increased performance measures in pigs

The research also showed that the benefits of supplementing sow diets with an optimal level of Vitamin D₃ extended beyond the sows themselves. Pigs produced by sows fed the diets with 907 IU/lb of vitamin D₃ experienced:

- Greater post-weaning ADG than pigs farrowed by sows fed the higher or lower level of vitamin D₃.
- Greater than 8 pounds more weight gained from birth to market (176 days of age) when compared to pigs produced by sows fed the low level of vitamin D₃, and nearly 3.5 pounds more weight gained than pigs from sows fed the high level of vitamin D₃.

"These results show the importance of sow vitamin D₃ supplementation goes beyond supporting the sows' nutrition and performance," Bergstrom says. "This research also demonstrates sow nutrition can have a measurable impact on the progeny performance from birth to market, and that optimum vitamin nutrition for the sow can help the progeny reach their genetic potential."

Increased performance measures in pigs

	Level of vitamin D ₃ supplementation in gestation and lactation		
	363 IU/lb	907 IU/lb	4,335 IU/lb
Progeny Performance			
Weaning weight, lbs	14.2	14.9	14.6
Day 0-35 ADG, lb	0.92	0.98	0.95
Day 35 BW, lb	46.4	49.1	47.8
Day 35-Market ADG, lb	2.04	2.11	2.08
Market BW, lb	292.2	300.9 (34.17)	297.5 (33.29)



Feedingfor30.com

Swine producers, veterinarians and nutritionists can learn more about the Feeding for 30[®] Program and access nutritional resources by visiting Feedingfor30.com or Facebook.com/Feedingfor30.

Because of factors outside of Purina Animal Nutrition LLC's control, individual results to be obtained, including but not limited to: financial performance, animal condition, health or performance cannot be predicted or guaranteed by Purina Animal Nutrition LLC.

Purina Animal Nutrition launched the Feeding for 30[®] program in 2012 with the goal of sharing nutrition and management advice and research to help the industry move toward 30 piglets per sow per year. The industry-wide initiative now includes partnerships with Zinpro Corporation and DSM Nutritional Products.

Purina Animal Nutrition LLC (www.purinamills.com) is a national organization serving producers, animal owners and their families through more than 4,700 local cooperatives, independent dealers and other large retailers throughout the United States. Driven to unlock the greatest potential in every animal, the company is an industry-leading innovator offering a valued portfolio of complete feeds, supplements, premixes, ingredients and specialty technologies for the livestock and lifestyle animal markets. Purina Animal Nutrition LLC is headquartered in Shoreview, Minn. and a wholly owned subsidiary of Land O'Lakes, Inc.

DSM Nutritional Products is a global science-based company active in health, nutrition and materials. By connecting its unique competences in Life Sciences and Materials Sciences, DSM is driving economic prosperity, environmental progress and social advances to create sustainable value for all stakeholders. DSM delivers innovative solutions that nourish, protect and improve performance in global markets such as food and dietary supplements, personal care, feed, pharmaceuticals, medical devices, automotive, paints, electrical and electronics, life protection, alternative energy and bio-based materials. DSM's 23,500 employees deliver annual net sales of around €9 billion. The company is listed on NYSE Euronext. More information can be found at www.dsm.com.