



A Discussion Guide for Veterinarians and Producers on Basic Swine Nutrition

This guide aims to facilitate productive conversations between veterinarians and swine producers on the fundamental aspects of swine nutrition. It covers essential topics such as nutrient requirements, feed formulation, and the impact of nutrition on animal health and productivity.

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As veterinarians and producers, your role in ensuring pigs receive the right balance of nutrients through each stage of production is not just important, it's essential. This guide is a tool to further enhance your understanding of basic swine nutrition, and it is strongly suggested that you consult additional resources before making any changes to an existing ration or begin formulating a new ration. Your dedication to meeting the basic nutritional needs of the pigs is key to optimizing production efficiency and supporting animal health and welfare.

- [Alternative Feed Sources for Swine](#)
- [Considerations for Protein Alternatives in Swine](#)
- [Alternative Feed Ingredients for Swine Diets](#)
- [General Nutrition Principles for Swine](#)

Key Nutritional Consideration for Swine

The essential nutritional components for pigs are water, energy, protein, fats, vitamins, and minerals. Each nutrient group contributes to the pig's growth and overall health.

Water

Water is critical for the survival of all living organisms and restricting water access leads to dehydration. Water should be available at all times, free choice. If you cannot offer water 24/7 and to avoid restricting water consumption, a good rule of thumb is to provide 1 gallon of water for each 1 lb. of feed per day and to deliver water multiple times per day if you are hand-watering pigs.

To contact an expert in your area, visit extension.msu.edu/experts or call 888-MSUE4MI (888-678-3464)

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Vitamins and Minerals

Pigs need a balance of essential vitamins and minerals to maintain metabolic functions, support immunity, and promote growth. **Calcium** (0.6-1.0%) and **phosphorus** (0.4-0.5%) are crucial for skeletal health and bone formation. Vitamins such as A, D, and E and trace minerals like zinc and copper support overall vitality and disease resistance. The easiest way to achieve the correct vitamin and mineral balance for pigs is to utilize a pre-mixed, concentrated additive that can be blended with your primary grains.

Energy

Energy is critical for pigs to support metabolic functions and maintain body heat. It is primarily derived from carbohydrates and fats. A diet providing **3,200–3,500 kcal of digestible energy (DE) per kg** is a good starting point for all pigs, depending on the animal's age, weight, and production stage (lactation vs. growing pigs).

Protein

Protein is vital for muscle development and tissue repair. Weaned pigs to growing pigs (13-18%) and lactating sows require more crude protein (18-22%) for rapid growth and milk production demands. Protein needs decrease as pigs age, with **16% crude protein** is sufficient for growing pigs and as little as 10% crude protein is sufficient for most sows and boars. Protein quality is essential, and sources such as soybean meal, fish meal, and other high-quality plant or animal proteins are typically used.

Fats

Fats are an important energy source and provide essential fatty acids supporting cellular functions and reproduction. Fats should be limited to **4-6%** of the total diet to ensure the pigs have sufficient energy and feed intake to support growth and maintenance. Additionally, fatty acids such as omega-3 or omega-6 are essential for immune health and reproductive success.

Fed Access

Consumption changes throughout a pig's life, and free choice is not always an option for all producers. The table below is a general reference for feed usage per pig, per day, and per production stage.

Table 1. Feed usage per pig, per day, per stage of production. Based on [NRC 2012](#).

Wean Pigs	Nursery Pigs	Growing Pigs	Finishing Pigs	Gestating Sows	Lactating Sows	Boars
0.5-1 lbs.	1-2.5 lbs.	3.5-6 lbs.	6-10 lbs.	4-6 lbs.	6-20 lbs.	4-6 lbs.



Feeder pig eating at ad libitum

Assessing Feed Ingredients for Swine

This guide provides an abbreviated table of ingredients that you might want to consider in your swine rations, giving you the flexibility to make choices that best suit your production goals and resources. With this knowledge, you have the power to make decisions that will optimize the health and performance of your pigs.

Table 2. Nutrient Composition and Suggested Maximum Inclusion – Abbreviated. The [full table version](#) can be found here.

Feed Ingredient	Dry Matter (percent)	Relative Value (Compared to...)	Dry Matter Basis			Suggested Maximum** Inclusion Rate (percent of Total Diet)	
			DE kcal/kg	Protein (percent)	Lysine percent	Grower/ Finisher	Nursing/ Dry Sows
Energy Feeds		Corn					
Alfalfa Meal	92	80-90	1989	18.5	0.80	10	NR/60
Bakery Waste, dried	91	100-110	4330	11.9	0.30	40	10
Barley	89	95-105	3427	12.7	0.46	80	80
Beet Pulp dried	91	90-100	3148	9.5	0.57	10	10
Fats and oils	100	175-210	8000	0.0	0.00	6	6
Oats	89	85-90	3112	12.9	0.45	20	20
Potato Chips	90	125-150	5833	7.2	0.34	25/10	25
Rye	88	100-105	3716	13.4	0.43	40/77	NR/25
Sorghum	89	95-98	3380	9.2	0.22	80	80
Triticale	90	90-105	3689	13.9	0.43	77	25
Wheat, hard red spring	88	105-115	3864	16.0	0.43	80	80
Wheat Middlings	89	110-130	3455	17.9	0.64	40	40
Whey, dried	96	130-140	3474	12.6	0.94	15	10
Protein Feeds		Soybean Meal					
Brewer's Grains dried	92	40-50	2283	28.8	1.17	10	10
Canola Meal	90	75-85	3206	39.6	2.31	15	15
Fava beans	87	65-75	3730	29.2	1.86	20	10
Fish Meal, menhaden	92	160-170	4098	67.7	5.23	5	5
Meat and Bone Meal	94	120-130	2440	51.5	2.51	7.5	7.5
Milk, whole (dried)	88	100-105	5667	27.5	2.50	10	10
Peas	89	65-75	3860	25.6	1.69	20/35	40
Sunflower meal	90	50-60	2010	26.8	1.01	20	10



For additional information, visit extension.msu.edu

Conclusion

In conclusion, ensuring pigs receive the right nutrition at every stage of their growth is key to their health and productivity. As veterinarians and producers, your role in understanding and applying proper nutritional practices directly impacts both animal welfare and the efficiency of the operation. By staying informed and regularly evaluating and adjusting rations, you help ensure pigs reach their full potential, while supporting sustainable and responsible production practices. This guide is meant to serve as a starting point but continued learning and collaboration will be essential in making the best decisions for your pigs and your operation's long-term success.