



Which fat source should I feed my pigs?



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Improving the rate and efficiency of gain is a common and continuing goal of swine producers. A practical method of achieving better efficiency is by supplementing swine diets with fat. There are various sources of fat or oils available for swine producers to use such as feed grade animal, poultry, choice white grease (pork), tallow (beef), yellow grease (restaurant grease), vegetable oils (canola, corn or soybean), and blended animal/vegetable fats. The factors to determine which fat source to be used in swine feeds should be based primarily on price and digestibility, with adequate consideration for handling characteristics. Digestibility of fat is influenced by the fatty acid, the make-up of the fat source and amount of water or contaminants present in the source. Many producers who mix their feed on-farm are turning to a dry fat ingredient. These dry fat products are more expensive than traditional liquid fats, but until the volume of use increases to a point to justify the necessary equipment for liquid fat usage, dry fat offers a high quality alternative.

It is well known that unsaturated fatty acids from triglycerides have a higher digestibility and absorption rate than the saturated fatty acids. Vegetable oils contain a high proportion of the unsaturated fatty acids, whereas animal fats contain more saturated fatty acids. Factors affecting digestibility is the ratio of unsaturated to saturated fatty acids; digestibility declines as the ratio falls below 1.6 to 1. However, shorter-chained fatty acids are more easily digested, but often contain less energy. [Table 1](#) reports some of the characteristics of lipid sources (fats or oils) used in swine diets.

Usually daily feed intake decrease, daily gain increases slightly and feed efficiency improves when dietary fat is added to the diet. Fat consistently improves feed efficiency by 2 % for each 1 % increment of added fat. Feed efficiency and daily gain are more improved by feeding supplemental fat to pigs during the hot summer months than during the cool winter season. Typically, in the winter no improvement in gain are observed, however, during the summer, daily gain may be increased by 1 % for each 1 % addition of fat. This is because fat additions increase the energy intake, especially during hot weather, and improves the lean growth rate of swine. Carcass fat content of swine is not greatly altered unless added fat concentrations exceed 5 % of the diet and the amino acid to calorie ratio in the diet is not maintained constant.

As prices for corn, soybean meal, and live hogs continue to fluctuate, swine producers are forced to find cheaper or alternative fat sources for swine diets. One such alternative is poultry fat, which is inexpensive and abundant in certain regions of the United States with Missouri being one of those places with access to poultry fat. Recent research results (Table 2) have shown that addition of up to 6 % choice white grease or poultry fat results in an increased feed efficiency throughout the growing-finishing phases, but may decrease feed intake and belly firmness (soft pork). The hardness and softness of fat is in direct relationship to fatty acid profile of the lipid with the more saturated fatty acids result in harder fat and the more unsaturated fatty acids cause soft pork. Dietary additions of either 4 or 6 % fat decreased the amount of saturated fats and increased unsaturated fats present in the bacon (Engel et al., 2001).

In conclusion, there is little difference in growth performance resulting from the type or source of fat used to feed growing pigs, however, different fat sources may affect pork quality especially the fat. Feeding unsaturated fats such as choice white grease and poultry fat may decrease fat firmness, resulting in bellies that are unacceptable for bacon production. Unsaturated fats are generally softer and more susceptible to rancidity than saturated fats.

Benefits of Fat Supplementation to Swine Feed:

- Increased energy (2.25 to 3.8 times values of carbohydrates)
- Dust control and improvement of health.
- Improved palatability (increased gain and efficiency).
- Improved lubrication of grinding/mixing equipment and pelleting.
- Formula density (less product and waste to move).

General Recommendations for Feeding Supplemental Fat to Swine:

- Adding 1 % fat reduced feed dust with little effect on performance.
- Diet flowability problems preclude the use of over 7 % added fat.
- Addition of fat into grower diets is more economical than in finisher diets.
- Adding fat at concentrations between 1 and 3 % has little effect on backfat.
- Adding fat at concentrations between 3 and 5 % will slightly increase backfat.
- Adding fat to lactation diets will increase pig survival by 2 to 3 %.

Table 1. Characteristics of Lipid Sources (as-fed basis)

Source	Total Saturated	Total Unsaturated	Fatty acids, % of total		EnergyME (kcal/kg)
			OleicC18:1	LinoleicC18:2	
Choice white grease	40.8	59.2	41.1	11.6	7,955
Poultry fat	31.2	68.8	37.3	19.5	8,180
Restaurant grease	29.9	70.1	47.5	17.5	8,205
Tallow	52.1	47.9	36	3.1	7,680

Canola oil	7.4	92.6	56.1	20.3	8,410
Coconut oil	91.9	8.1	5.8	1.8	8,070
Corn oil	13.3	86.7	24.2	59	8,755
Soybean oil	15.1	84.9	22.8	51	8,400
Herring oil	22.8	77.2	11.9	1.1	8,330
Menhaden oil	33.3	66.7	14.5	2.1	8,135
Source: NCR, 1998					

Table 2. Growth performance and quality characteristics of gilts fed choice white grease or poultry fat (Engel et al., 2001)

Item	Control	Choice white grease, %			Poultry fat, %		
		2	4	6	2	4	6
Performance, lbs							
Initial BW	134	133	130	131	132	134	134
ADG	2.02	2.11	2.16	2.07	2.05	2.05	2.07
ADFI	6.89	7.08	6.91	6.40	6.69	6.91	6.42
G/F	0.68	0.66	0.70	0.73	0.68	0.66	0.73
Final BW	242	246	245	242	242	242	244
Belly Firmness, cm*							
Initial	23.4	22.1	25.9	19.31	23.4	22.9	18
10 min.	18.3	17.5	20.8	5.2	17.3	17.8	13.2
* Bellies were placed longitudinally over a metal bar, and the distance between the rib and ham ends were measured initially and after 10 minutes of suspension.							

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