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Feed Budgets

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Tracking feed usage is an important part of record keeping. Feed costs are typically 2/3 or more of the total cost of producing pigs, so even a small change in feed costs can affect profitability. Without accurate feed records, it is impossible to evaluate diet changes that result in a lower cost diet but may affect pig growth. Leaflet number 370 of this handbook provides example pig diets. For the following examples, diets will be summarized and feeding phases will be simplified.

Table 1. Reference diets for pigs.

	Growing Pig Body Weights			Sow Diets	
	30-80	80-160	>160	Gestation	Lactation
% Corn	65	77	85	86	69
% Soybean meal	32	21	13	10	28
% Base mix	3	2	2	4	3
Phase Name	1	2	3	G	L

Adapted from Life Cycle Swine Nutrition, 1996.

For these examples the following production assumptions are made:

- ◆ Sows farrow 2 litters of pigs per year.
- ◆ Lactation length is 42 days.
- ◆ Each sow produces 18 weaned pigs per year.
- ◆ Average pig weight at weaning is 40 lb.
- ◆ Pigs are sold at 270 lb live weight.
- ◆ Gestating sows receive 5 lb of feed per day.
- ◆ Lactating sows average 16 lb of feed per day.
- ◆ Sows maintain a constant body weight.
- ◆ Phase 1 pigs have a feed conversion of 2:1.
- ◆ Phase 2 pigs have a feed conversion of 2.5:1.
- ◆ Phase 3 pigs have a feed conversion of 3.5:1.

Feed Budget to Produce 18 weaned pigs

Gestation Feed

$$365 \text{ days/yr} - (2 \text{ lactations} \times 42 \text{ days/lactation}) = 281 \text{ days}$$

$$281 \text{ days} \times 5 \text{ lb/day} = \mathbf{1405 \text{ lb gestation diet}}$$

$$1405 \text{ lb gestation diet} \times 86\% \text{ corn} = 1208 \text{ lb corn}$$

$$1405 \text{ lb gestation diet} \times 10\% \text{ SBM} = 141 \text{ lb SBM}$$

$$1405 \text{ lb gestation diet} \times 4\% \text{ base mix} = 56 \text{ lb base mix}$$

Lactation Feed

$$2 \text{ lactations/yr} \times 42 \text{ days/lactation} = 84 \text{ days}$$

$$84 \text{ day} \times 16 \text{ lb/day} = \mathbf{1344 \text{ lb lactation diet}}$$

$$1344 \text{ lb lactation diet} \times 69\% \text{ corn} = 928 \text{ lb corn}$$

$$1344 \text{ lb lactation diet} \times 28\% \text{ SBM} = 376 \text{ lb SBM}$$

$$1344 \text{ lb lactation diet} \times 3\% \text{ base mix} = 40 \text{ lb base mix}$$

Table 2. Feed to produce 18 weaned pigs.

	Gestation	Lactation	Total	Per Pig
Corn, lb	1208	928	2136	119
Soybean meal, lb	141	376	517	29
Base mix, lb	56	40	96	5
Total, lb	1405	1344	2749	153

Each pig weighs 40 lb, thus the whole herd feed conversion for producing weaned pigs in this example is:

$$153 \text{ lb feed} \div 40 \text{ lb gain} = 3.85$$

Feed budget to raise 1 pig from 40 lbs to 270 lbs

Phase 1

$$80 \text{ lb end wt} - 40 \text{ lb start wt} = 40 \text{ lb gain}$$

$$40 \text{ lb gain} \times \frac{2 \text{ lb feed}}{1 \text{ lb gain}} = \mathbf{80 \text{ lb Phase 1 feed}}$$

$$80 \text{ lb P1 feed} \times 65\% \text{ corn} = 52 \text{ lb corn}$$

$$80 \text{ lb P1 feed} \times 32\% \text{ SBM} = 26 \text{ lb SBM}$$

$$80 \text{ lb P1 feed} \times 3\% \text{ base mix} = 2 \text{ lb base mix}$$

Phase 2

$$160 \text{ lb end wt} - 80 \text{ lb start wt} = 80 \text{ lb gain}$$

$$80 \text{ lb gain} \times \frac{2.5 \text{ lb feed}}{1 \text{ lb gain}} = \mathbf{200 \text{ lb Phase 2 feed}}$$

$$200 \text{ lb P2 feed} \times 77\% \text{ corn} = 154 \text{ lb corn}$$

$$200 \text{ lb P2 feed} \times 21\% \text{ SBM} = 42 \text{ lb SBM}$$

$$200 \text{ lb P2 feed} \times 2\% \text{ base mix} = 4 \text{ lb base mix}$$

Phase 3

270 lb end wt – 160 lb start wt = 110 lb gain

$$110 \text{ lb gain} \times \frac{3.5 \text{ lb feed}}{1 \text{ lb gain}} = \mathbf{385 \text{ lb Phase 3 feed}}$$

385 lb P3 feed × 85% corn = 327 lb corn

385 lb P3 feed × 13% SBM = 50 lb SBM

385 lb P3 feed × 2% base mix = 8 lb base mix

Table 3. Feed to feed 1 pig from 40 lbs to 270 lbs.

	P1	P2	P3	Total
Corn, lb	52	154	327	533
Soybean meal, lb	26	42	50	118
Base mix, lb	2	4	8	14
Total, lb	80	200	385	665

Thus the feed conversion ratio for 230 lb of gain in this example is:

$$665 \text{ lb of feed} \div 230 \text{ lb gain} = 2.89$$

Feed budget for 1 pig farrow-to-finish

This can be calculated by combining the feed budget for weaned pigs and growing pigs.

Table 4. Feed budget for 1 pig farrow-to-finish.

	Sow Feed	Pig Feed	Total
Corn, lb	119	533	652
Soybean meal, lb	29	118	147
Base mix, lb	5	14	19
Total, lb	153	665	818

In this example we assumed a 270 lb weight gain, thus the feed conversion ratio for the entire farrow-to-finish operation is:

$$818 \text{ lb feed} \div 270 \text{ lb gain} = 3.03$$

The above examples show how feed budgets can be generated and feed conversion calculated. It should be noted that the above are idealized examples. Actual production records show that feed conversion for the best niche herds is closer to 3.3 and others are considerably greater.

Additional Resources

Iowa State University Extension. 1996. Life Cycle Swine Nutrition. PM-489. Iowa State University. Ames.

Iowa State University Extension. 2007. Ag Decision Maker. Iowa State University. Ames.