FEED FORMULATION

How to formulate pig feed: a step-by-step guide

A practical method for formulating pig feed from local ingredients: set nutrient targets, balance energy and lysine, add minerals and premix, then check the result.

By FeedSport Nutrition Team · Published 6 October 2026 · Updated 28 October 2026 · 4 min read

KEY POINTS

- Formulate for one class of pig at a time: weaner, grower, finisher, dry sow or lactating sow.
- Balance energy and digestible lysine first. Crude protein follows.
- Reserve 3–4% of the mix for minerals, salt and premix before you balance the main ingredients.
- Check the finished diet against every target, not only protein.

Formulating pig feed means choosing ingredients and inclusion rates so that every kilogram of feed supplies what the pig needs for its stage of production, at the lowest practical cost. You can do it with a calculator and a notebook, but the steps are the same whether you use paper, a spreadsheet or our formulation tool.

Step 1: Decide which pig you are feeding

A 10 kg weaner, a 70 kg finisher and a lactating sow need very different diets. Pick one class and formulate for it. The common classes are:

Class	Typical live weight	What matters most
Creep / weaner	5–25 kg	Highly digestible protein, palatability
Grower	25–60 kg	Lysine supply for lean growth
Finisher	60–110 kg	Energy, feed cost
Dry (gestating) sow	—	Controlled energy, fibre for satiety
Lactating sow	—	High energy and lysine to protect milk yield

Step 2: Set your nutrient targets

At minimum, write down targets for:

- **Energy** (metabolisable or net energy, in kcal/kg)
- **Standardised ileal digestible (SID) lysine** (%)
- **Calcium** and **digestible phosphorus** (%)
- **Sodium or salt** (%)

Use a recognised reference for the numbers. Our formulation tool uses the Brazilian Tables for Poultry and Swine (2024), which are well suited to tropical conditions and ingredients such as sorghum and sunflower meal. Genetics suppliers also publish targets for their own pig lines.

Lysine is the first limiting amino acid in almost every pig diet built on cereals and soybean meal. That makes it more useful than crude protein: two diets with the same crude protein can supply very different amounts of digestible lysine.

Step 3: List your ingredients with specifications and prices

For each ingredient, record crude protein, energy for pigs, lysine, calcium and phosphorus on the same basis (usually as fed), and the delivered price per kilogram. Use the supplier's specification, not a figure from memory. Our product pages show typical values for sorghum, soybean meal and the other ingredients we stock. See also how to read a feed ingredient specification.

Step 4: Reserve space for minerals, salt and premix

Before balancing the main ingredients, set aside the small-inclusion items. A typical grower diet reserves about 3–4% for:

- Dicalcium phosphate for phosphorus and calcium
- Feed limestone for calcium
- Salt
- Vitamin and trace-mineral premix at the manufacturer's stated inclusion

That leaves about 96–97% of the mix for energy and protein ingredients.

Step 5: Balance energy and protein ingredients

With two main ingredients, the Pearson square is a quick way to find a starting ratio. For example, to reach about 16% crude protein from sorghum (8.65% CP) and soybean meal (45.6% CP):

1. Subtract the target from the protein meal: 45.6 – 16 = 29.6 parts sorghum.
2. Subtract the cereal from the target: 16 – 8.65 = 7.35 parts soybean meal.

3. Total parts: 29.6 + 7.35 = 36.95.
4. Sorghum: 29.6 ÷ 36.95 = 80%. Soybean meal: 7.35 ÷ 36.95 = 20%.

Because you reserved 3–4% for minerals and premix, you need to raise the protein target slightly (16 ÷ 0.965 ≈ 16.6%) before doing the square, then scale the result to 96.5% of the mix.

The Pearson square balances one nutrient only. Treat its answer as a first draft, then check lysine and energy. If lysine falls short, you can add more soybean meal or add a small amount of L-lysine HCl. Crystalline lysine is often the cheaper way to close a gap and lets you reduce expensive protein meal.

Step 6: Check every nutrient

Multiply each ingredient's nutrient content by its inclusion rate and add them up. Compare the totals with your targets for energy, SID lysine, calcium, digestible phosphorus and salt. Adjust and repeat. This is where a formulation tool saves time: it does the arithmetic for every nutrient at once and shows which targets are below or above range.

Step 7: Mix it properly and record what you did

Even a well-balanced formula fails if it is badly mixed. Small-inclusion items like premix and lysine need a pre-blend step. See mixing on farm: getting an even mix. Write down the formula, the ingredient batches used and the date, so you can link performance back to the feed. Once you know what a bag of your mix costs, enter it in the pig farming profit calculator to see what it means for a whole batch of pigs.

When to ask for help

Get a formulation reviewed if you are changing a main ingredient, feeding a new genetic line, or seeing poorer growth or feed conversion than expected. Send us your ingredient list and targets on WhatsApp and we will check it with you.

Need a diet checked? Send your ingredients and targets to the FeedSport nutrition team on WhatsApp +263 77 468 4534 or sales@feedsport.co.zw.

Figures in this guide are typical values and general ranges. Confirm targets for your animals, genetics and ingredients, and check batch specifications before formulating.