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The layout of a typical swine formula

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This issue examines the principal building blocks of a conventional swine formula and the nutritional role that each one plays, using a growing-pig diet as an example.

This issue is designed for feed professionals outside commercial swine nutrition who need a practical reference point for understanding how the ingredients in a pig diet fit together. Feed suppliers, additive and ingredient companies, pig producers, students, and veterinarians often discuss diets, compare ingredients, and judge proposed changes without seeing how the whole formula is assembled. The ingredients below contribute several nutrients but are grouped by their principal formulation role. Actual formulations change with ingredient analyses, local availability and price, pig performance, health status, manufacturing conditions, regulations, and the nutritionist's judgment.

Cereals and energy sources

Corn is the most familiar energy source, but wheat, barley, sorghum grain, oats, and triticale are also common cereal bases. In addition, energy-rich coproducts, plus fats and oils, often replace part of the cereal fraction when their nutrient value and price justify inclusion. Cereals usually form the largest share of a simple growing-pig diet, but their final inclusion depends on energy density, ingredient cost, and the other ingredients selected.

Protein-rich ingredients

Soybean meal remains a conventional protein anchor because it supplies a useful combination of digestible amino acids, especially lysine. Its inclusion is no longer decided by crude protein alone; the question is how it complements the cereal grain and supplemental amino acids in the complete diet. Other common protein-rich ingredients include rapeseed meal, DDGS, and sunflower meal. Their use depends not only on price, but also on amino-acid digestibility, fiber content, processing quality, variability, and practical inclusion limits. Fish meal, once used routinely in swine diets, is now largely reserved for piglet feeds, where its concentrated nutrient supply may better justify its cost.

Supplemental amino acids

Modern diets are formulated around standardized ileal digestible amino acids, a measure of amino-acid supply at the end of the small intestine. Lysine is the usual starting point, followed by suitable ratios of threonine, methionine, tryptophan, valine, and the other essential amino acids. Supplemental sources, such DL-methionine, help meet this ideal protein profile avoiding excess crude protein when economically feasible.

Calcium, phosphorus, and salt

Calcium and phosphorus must be supplied in the correct balance to support skeletal growth and normal physiological functions. Phytase can release part of the phosphorus, and some calcium, already bound in plant ingredients; this must be accounted for deliberately. Limestone supplies much of the supplemental calcium, whereas monocalcium phosphate is a common phosphorus source, and feed-grade salt provides sodium and chloride.

Vitamins and trace minerals

Vitamins and trace minerals represent only a small fraction of the diet, yet an error can affect growth, bone development, immunity, reproduction, or product quality. A premix simplifies manufacturing, but its composition is not universal: it should reflect ingredient background levels, pig age, local regulations, and intended safety margins. Nutritionists use their own preferred profiles, usually beginning with established requirement standards such as those provided by NRC/NASEM guidelines.

Purpose-specific additives

Some additives, for example phytase, have become routine because they solve a predictable nutritional problem. Others—such as enzymes, acidifiers, microbial products, mycotoxin-management products, or specialty ingredients—should be used only when the pigs, ingredients, health risks, and expected return justify them. Products within the same additive category can differ in dose, stability, supporting evidence, and, where applicable, nutrient matrix values, so they should not be treated as automatically interchangeable.

In Brief, a pig diet is a coordinated system in which energy and feed intake shape nutrient delivery, amino acids support lean growth, minerals support structure and functions, premixes protect against deficiencies, and additives address defined constraints. The formula may change substantially from one situation to another, but the logic remains.

Ingredient	**Kg/MT**
Corn, yellow dent	800.0
Soybean meal, dehulled	170.0
Limestone	10.0
Monocalcium phosphate	8.0
Salt	5.0
L-Lysine HCl	3.0
L-Threonine	1.0
DL-Methionine	0.5
Vitamin–trace mineral premix	2.5
Total	**1,000.0**
Calculated nutrient	**Diet**
Metabolizable energy, kcal/kg	3,315
Crude protein, %	15.10
SID lysine, %	0.85
Calcium, %	0.60
STTD phosphorus, %	0.25
Sodium, %	0.20

This is an illustrative formula for a conventional 50–75 kg growing pig. It is provided for educational reference and should not be copied as a commercial formula.

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