POULTRY NUTRITION

How to Mix Your Own Broiler Feed in Zimbabwe: Ingredients, Ratios and Costs

Learn how to mix broiler feed in Zimbabwe using maize, soya meal and other ingredients. Understand feed ratios, formulation and costs.

By FeedSport Nutrition Team · Published 23 October 2026 · Updated 29 October 2026 · 12 min read

KEY POINTS

- Broiler starter, grower and finisher diets differ in protein, amino acids and energy, so one all-purpose mix will be too weak for chicks, too expensive for finishers, or both.
- A Pearson square blend of maize (8.5% CP) and soya meal (46% CP) at 22% crude protein works out to 64% maize and 36% soya meal, but it is not a complete broiler ration.
- A complete ration must also meet energy, digestible lysine and methionine, calcium, available phosphorus, sodium, vitamin and trace mineral targets, which is what least-cost formulation is for.
- In the illustrative 100 kg costing, milling, transport, labour and losses added roughly 17% on top of the ingredients.
- Judge home mixing on feed cost per kg of gain (price per kg × FCR), not on the price of the bag.

The farmer's question: can mixing your own feed save money?

Picture a farmer near Chinhoyi raising 500 broilers a batch. After harvest, maize from a neighbour is cheap, and the bags of commercial broiler starter at the agro-dealer look expensive by comparison. Why not buy maize and soya meal, mix them on the farm and keep the difference?

The honest answer: **sometimes, yes — but only if the home mix gives the birds the same nutrition, is mixed evenly, and the flock still performs.** Cheap ingredients become expensive meat when birds grow slowly, convert feed poorly or get sick.

The number that decides it is not the price of a bag. It is the **feed cost per kilogram of liveweight gain**. This guide explains how broiler feed formulation works, which ingredients Zimbabwean farmers can use, what a 100 kg batch really costs to mix, and how to decide whether mixing is worth it for your farm.

Broiler starter, grower and finisher: why one mix does not fit all

Modern broilers grow extremely fast, and their needs change from week to week. Young chicks need concentrated protein and amino acids to build gut, bone and muscle. Older birds need relatively more energy and relatively less protein per kilogram of feed.

A few terms first:

- **Crude protein (CP)** is a rough measure of total protein in the feed.
- **Amino acids** are the building blocks of protein. Lysine and methionine are usually the first to run short in maize–soya diets.
- **Digestible** amino acids are the share the bird can actually absorb, which is lower than the total amount measured in the lab.
- **Metabolisable energy (ME)** is the energy the bird can use, given here in megajoules per kilogram (MJ/kg).
- **Available phosphorus** is the phosphorus the bird can use. Much of the total phosphorus in plant ingredients is locked up and poorly available.

Stage	Indicative age	Crude protein	Digestible lysine	ME (MJ/kg)	Main priority
Broiler starter	About 0–10 days	~22–23%	~1.25–1.32%	~12.4–12.6	Early growth, gut and skeleton development
Broiler grower	About 11–24 days	~20–21.5%	~1.10–1.18%	~12.8–13.0	Rapid muscle growth
Broiler finisher	About 25 days to slaughter	~18.5–20%	~1.00–1.08%	~13.0–13.4	Efficient, low-cost gain

Approximate, as-fed ranges based on recent commercial breeder guidance for fast-growing strains such as Ross 308 and Cobb 500 (see References). They are **illustrative**, not a specification. Exact targets depend on the strain, sex, target slaughter weight and feeding programme, so always work from the current nutrition guide for the birds you actually keep.

Calcium and available phosphorus also fall as birds age — very roughly from around 0.9–1.0% calcium and 0.45–0.50% available phosphorus in starter diets towards about 0.7–0.8% and 0.35–0.40% in finisher diets. Sodium, vitamins and trace minerals must be supplied at every stage.

The practical point: a single "all-purpose" broiler mix will be too weak for chicks, too expensive for finishers, or both.

Ingredients available to farmers in Zimbabwe

Most home-mixed broiler feed in Zimbabwe is built on maize and soya meal, with minerals, synthetic amino acids and a premix to fill the gaps. These ingredients are **not interchangeable** — each has a specific job.

Ingredient	Main role	Typical composition (approx., as-fed)	Main cautions
Maize	Energy	CP ~7.5–9%; ME ~13.3–13.7 MJ/kg	Must be dry and sound. Mouldy maize can carry aflatoxins that harm birds.
Soybean meal (soya meal)	Protein, lysine	CP ~44–48%, depending on dehulling	Must be correctly heat-processed. Under-processed meal contains anti-nutritional factors; over-heated meal loses digestible lysine.
Wheat bran	Fibre, some protein	CP ~14–17%; low energy, high fibre	Dilutes energy. Nutritionists usually keep it low, especially in starter.
Sunflower meal	Protein	CP varies widely (~28–40%) with hull content	High fibre, low lysine and lower energy. Usually restricted, with lysine added.
Feed-grade limestone	Calcium	~36–38% calcium	Use feed grade only. Too much calcium interferes with phosphorus and mineral use.
Dicalcium phosphate (DCP)	Phosphorus and calcium	~18% P, ~21–24% Ca (product-dependent)	Use feed-grade product and the analysis on its label.
Salt	Sodium and chloride	~39% sodium	Needed in small amounts; excess causes wet droppings and wet litter.
L-lysine HCl	Lysine	~78% lysine	Very small amounts; must be weighed precisely and pre-blended.
DL-methionine	Methionine	~99% methionine	As for lysine.
Vitamin/mineral premix	Vitamins and trace minerals	As stated on the label	Must be designed for broilers. Use the label rate and check the expiry date.

Ingredient values change between batches, suppliers, seasons and processing plants. A soya meal that is 44% protein behaves very differently from one at 48%. Where you can, ask suppliers for a specification sheet and send samples for **laboratory analysis** — at minimum moisture and crude protein, plus mycotoxin testing for maize.

Feed ratios: a simple Pearson square example

The **Pearson square method** is a quick way to blend two ingredients to hit one nutrient target. It is the classic starting point for poultry feed mixing ratios.

Suppose you want a maize–soya blend at **22% crude protein**, and you assume (for illustration only) maize at **8.5% CP** and soya meal at **46% CP**.

1. Put the target (22) in the middle of a square, maize (8.5) top-left and soya meal (46) bottom-left.

2. Subtract across the diagonals, ignoring minus signs:
   - Maize parts = 46 – 22 = **24 parts**
   - Soya meal parts = 22 – 8.5 = **13.5 parts**
3. Add the parts: 24 + 13.5 = **37.5 parts**
4. Convert to percentages:
   - Maize = 24 ÷ 37.5 = **64%**
   - Soya meal = 13.5 ÷ 37.5 = **36%**

Check: (0.64 × 8.5) + (0.36 × 46) = 5.44 + 16.56 = **22.0% CP**. For a 100 kg batch, that is 64 kg maize and 36 kg soya meal.

> **Important:** this blend is **not a complete broiler ration.** It only balances crude protein. It says nothing about energy, digestible lysine and methionine, calcium, available phosphorus, sodium, vitamins or trace minerals. Once minerals, amino acids and premix are added, they take up space in the bag and the maize and soya proportions have to change. Fed on its own, a maize–soya blend will leave birds short of several essential nutrients.

How a complete ration is formulated

A complete ration has to meet many targets at the same time. Fixing protein often breaks energy; adding limestone shifts calcium-to-phosphorus balance; swapping soya for sunflower changes lysine and fibre. Doing that by hand quickly becomes impractical.

Nutritionists use **least-cost formulation**, a mathematical method (linear programming) built into feed formulation software. You supply four things:

1. **Nutrient requirements** — minimums and maximums for the bird and stage.
2. **Ingredient analyses** — what each ingredient actually contains, ideally from lab results.
3. **Inclusion limits** — for example, a cap on high-fibre ingredients.
4. **Ingredient prices** — what you will really pay delivered to the farm.

The software finds the **cheapest feasible ration** that meets every constraint you set. Two cautions matter:

- The answer is only as good as the inputs. Wrong ingredient values or loose targets produce a cheap feed that underperforms.
- Cheapest per kilogram of feed is **not guaranteed** to be cheapest per kilogram of liveweight gain. A slightly richer diet can pay for itself through better growth and feed conversion.

Sometimes there is **no feasible solution**: the ingredients available simply cannot meet all the targets — for example, too little high-quality protein to reach starter amino acid levels without exceeding fibre limits. The fix is to change ingredients (such as adding synthetic lysine or a better soya meal) or revisit the targets with

a nutritionist, not to quietly drop a constraint.

Let the software balance the whole ration

FeedSport Studio runs least-cost formulation for pigs and poultry. Choose the animal and stage, enter the ingredients you have and what you pay, and get the cheapest recipe that meets every requirement.

Try the free feed calculator | Take the Studio tour

What would 100 kg cost to mix?

The table below is a **hypothetical costing illustration**. It is **not a ready-to-feed recipe** and has not been nutritionally balanced. Prices are **illustrative placeholders**, not current Zimbabwean market quotations, and the premix line uses a placeholder rate — your premix label decides the real one.

Ingredient costs (illustrative)

Ingredient	Quantity (kg)	Price (US$/kg)	Cost (US$)
Maize	61.50	0.33	20.30
Soya meal	34.00	0.70	23.80
Feed-grade limestone	1.30	0.15	0.20
Dicalcium phosphate	1.80	1.10	1.98
Salt	0.35	0.40	0.14
L-lysine HCl	0.25	2.50	0.63
DL-methionine	0.30	4.50	1.35
Broiler premix (placeholder rate)	0.50	5.00	2.50
Total	**100.00**		**50.89**

Line costs are rounded; the unrounded total is US$50.885.

Costs farmers often forget (illustrative)

Item	Cost (US$ per 100 kg)
Milling (grinding maize)	2.00

Item	Cost (US$ per 100 kg)
Transport of ingredients	3.00
Weighing and mixing labour	1.50
Shrinkage and spillage (2% of materials)	1.02
Bags, power and other materials	1.00
Subtotal	**8.52**

Illustrative total: about **US$59.40 per 100 kg** (US$50.885 materials + US$8.518 other costs, before rounding), or about **US$0.59 per kg**.

Replace every figure with your own delivered prices and real costs. Note how the "hidden" costs added roughly 17% on top of the ingredients in this example.

Want to cost a mix with your own prices?

Send us the ingredients you can buy and what you pay delivered to the farm. Our nutrition team will help you work out what a balanced batch really costs, and source the soya meal, amino acids, minerals and premix.

Cost my broiler mix

Practical on-farm mixing and quality control

Good formulation is wasted if the feed is mixed badly. Focus on these points:

- **Weigh, don't guess.** Use a scale suited to the batch for bulk ingredients and a separate, accurate small scale for amino acids, salt and premix.
- **Store ingredients well.** Keep them dry, off the floor, away from rodents and in rotation, oldest first. Damp maize is where mould starts.
- **Get particle size right.** Grind maize evenly — not to dust, not left coarse. Very fine meal can be dusty and less palatable; very coarse particles separate during handling.
- **Pre-blend small ingredients.** Mix premix, lysine, methionine and salt with a few kilograms of ground maize first, then add this pre-blend to the main batch. This helps spread tiny amounts evenly.
- **Use a sensible order of addition.** Typically the bulk ingredients go in first, then the pre-blend, with any liquids last. Follow your mixer manufacturer's guidance.
- **Choose suitable equipment.** Shovel-mixing on a floor rarely achieves good uniformity for small-inclusion ingredients. A proper mixer helps, but only when used at its rated capacity and mixing time.

- **Check uniformity.** Uneven feed means some birds get too much premix and others too little. Watch for flock variation and consider periodic laboratory checks.
- **Avoid contamination.** Never mix broiler feed in equipment used for medicated feed, fertiliser or chemicals without thorough cleaning.

There is no single correct mixing time or premix rate for every farm. Follow the premix label and your equipment manufacturer's instructions.

Common mistakes that cost farmers money

- **Balancing only crude protein.** A feed can hit 22% CP and still be short of lysine, methionine, energy or minerals.
- **Substituting ingredients without reformulating.** Swapping soya meal for sunflower meal kilo-for-kilo changes protein quality, fibre and energy.
- **Using an unspecified premix.** A layer premix, pig premix or unlabelled product is not a broiler premix.
- **Ignoring ingredient quality.** Mouldy maize or poorly processed soya can undo a good formula.
- **Exceeding sensible inclusion levels.** Too much bran or sunflower meal dilutes energy and adds fibre birds handle poorly.
- **Underestimating processing costs.** Milling, transport, labour and losses add up quickly.
- **Assuming a cheaper bag means cheaper weight gain.** It often doesn't, as the next section shows.

Should you mix or buy complete commercial feed?

There is no single right answer. The table below is a decision framework, not a rule.

Factor	Buying complete feed tends to suit farms that…	Mixing may suit farms that…
Scale	Raise small or irregular batches	Use enough feed to justify equipment and time
Ingredient supply	Cannot secure reliable, good-quality ingredients	Have dependable supply and storage
Equipment	Lack a mill, mixer and accurate scales	Own or can reliably access them
Formulation skill	Have no access to formulation support	Work with a nutritionist or reliable formulation tool
Quality control	Cannot test ingredients	Can test key ingredients and inspect batches
Records	Don't track feed use and weights	Record feed, weights and mortality per batch

Feed cost per kg of gain is calculated as **price per kg of feed × feed conversion ratio (FCR)**, where FCR is kilograms of feed eaten per kilogram of liveweight gained.

Scenario (illustrative)	Feed price (US$/kg)	FCR	Feed cost per kg gain (US$)
Commercial complete feed	0.68	1.55	1.05

Scenario (illustrative)	Feed price (US$/kg)	FCR	Feed cost per kg gain (US$)
Well-formulated home mix	0.59	1.60	0.94
Poorly balanced home mix	0.59	1.90	1.12

Figures are illustrative only; they are not predictions of how any feed will perform.

The two home mixes cost exactly the same per kilogram. Yet the poorly balanced one produces each kilogram of chicken about 18 cents more expensively than the well-formulated one — and more expensively than the commercial feed. Only your own batch records can tell you which scenario you are in. To see what a different feed price means for a whole batch, enter it in the broiler budget calculator.

Where FeedSport fits

FeedSport aims to help Zimbabwean farmers understand feed ingredients and how feed formulation works. You can read more practical guides in the FeedSport Knowledge Centre, explore formulation on our formulations page, and learn more about key protein ingredients such as soybean meal and sunflower meal.

If you are planning to mix your own broiler feed, use these resources to build your understanding — and for a commercial-scale operation, have your formulation checked by a qualified animal nutritionist.

Have your broiler feed checked

Whether you mix your own or buy complete feed, our nutrition team will go through your formulation, ingredients and batch records with you.

WhatsApp the team | Other ways to contact us

Frequently asked questions

Are maize and soya meal alone enough for broilers?

No. Maize and soya supply most of the energy and protein, but broilers also need calcium, available phosphorus, sodium, vitamins, trace minerals and usually supplementary lysine and methionine.

What is the difference between starter and finisher feed ratios?

Starter feed is more concentrated in protein and amino acids, so it contains relatively more soya meal. Finisher feed contains relatively more energy and less protein, so maize makes up a larger share. Exact ratios depend on your ingredients and your strain's requirements.

Can I use wheat bran in broiler feed?

It can be used in limited amounts, but it is high in fibre and low in energy compared with maize. It is generally less suitable for young chicks. Include it only within a properly formulated diet.

Is mixing broiler feed always cheaper?

No. Once milling, transport, labour, losses and premix are counted — and if growth or FCR suffers — home-mixed feed can cost more per kilogram of gain than commercial feed.

Why do premix instructions matter so much?

Premixes are designed for a specific species, stage and inclusion rate. Using too little causes deficiencies; too much can be wasteful or harmful. Always follow the label for a product made for broilers.

When should I talk to a nutritionist?

Before you start mixing at any meaningful scale, whenever you change an ingredient or supplier, and if flock growth, FCR or health slips.

References

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3. Rostagno, H.S. et al. (2017). Brazilian Tables for Poultry and Swine: Composition of Feedstuffs and Nutritional Requirements, 4th ed. Universidade Federal de Viçosa.
4. National Research Council (1994). Nutrient Requirements of Poultry, 9th revised ed. National Academies Press. https://nap.nationalacademies.org/catalog/2114
5. Feedipedia — Animal Feed Resources Information System (INRAE, CIRAD, AFZ, FAO). Ingredient datasheets for maize grain, soybean meal, wheat bran and sunflower meal. https://www.feedipedia.org

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.