Fish Feed Formulation for Tilapia & African Catfish (Beginner-Friendly Guide)

Creating your own fish feed is one of the most empowering things you can learn as a fish farmer. It saves money, improves fish growth, and helps you understand exactly what your fish are eating.

Why Feed Formulation Matters

Fish, just like humans, need a balanced diet to grow well.

- **Tilapia** grows fast when feed contains **25–30% protein**.
- **African catfish (Clarias gariepinus)** needs even more — about **35–40% protein**, especially when young.

When you formulate your own feed:

✓ You reduce feeding costs
✓ You control feed quality
✓ You can use local, cheap ingredients
✓ Your fish grow faster and healthier

Three Things You Must Always Remember

1. Know Your Fish's Protein Requirement

Fish type	Starter stage	Grower stage	Finisher stage
Tilapia	30% protein	28%	25%
African Catfish	40% protein	35%	30–32%

2. Know the Ingredients Available Locally

Different ingredients contain different levels of protein. Some foods are **high-protein**, some are **low-protein**.

3. Always Think in Two Sides

Just like in the Pearson Square method:

- **A high-protein ingredient**
- **A low-protein ingredient**
- Mix them to reach the **protein level your fish require**

Locally Available Ingredients (30 Options)

(Protein values are approximate and depend on region)

Leafy & Plant Materials

1. Cassava leaves — 27–31%
2. Sweet potato leaves — 29–35%
3. Arrowroot leaves — 30–33%
4. Pumpkin leaves — 27%
5. Moringa leaves — 30–35%
6. Cowpea leaves — 25–28%
7. Amaranth leaves — 28–30%

Energy Sources (Low Protein)

8. Maize bran — 9–12%
9. Wheat bran — 17%
10. Rice bran — 10–14%
11. Posho mill waste — 9–11%
12. Cassava flour — 2–4%
13. Sweet potato tubers — 3–5%
14. Arrowroot tubers — 5–7%
15. Molasses — 3–5%

Animal Protein Sources (High Protein)

16. Termites — 38–42%
17. Blood meal — 63–65%
18. Fishmeal (omena/dagaa) — 55–65%
19. Freshwater shrimps (Ochong'a) — 58–63%
20. Earthworms — 60–70%
21. Black soldier fly larvae — 42–45%

Oilseed Cakes (High Protein)

22. Cottonseed cake — 38–41%
23. Sunflower seed cake — 28–32%
24. Soybean meal — 44–48%
25. Groundnut cake — 40–45%
26. Sesame seed cake — 35–38%

Other Useful Additives

27. Premix (vitamins & minerals) — 1–2%
28. Salt — 0.5%
29. Limestone (for calcium) — 1%
30. Yeast (growth booster) — 2%

Important Warning About Arrowroot Leaves

Fresh arrowroot leaves contain **oxalates**, which cause itching.

Always boil arrowroot leaves before feeding fish to remove the irritant.

Preparation of Feed Ingredients

1. Dry leaves under shade (not direct sun).
2. Grind all ingredients into fine powder.
3. Measure ingredients correctly.
4. Mix thoroughly.
5. Add little water to form dough.
6. Pelletize or sun-dry on a clean mat.

Simple Pearson Square Demonstration

Let's formulate **30% protein feed for Tilapia** using:

- **Fishmeal:** 60% protein
- **Maize bran:** 10% protein
- **Target:** 30% protein

This is where the Pearson Square by memeilo helps.

Why Farmers Should Use This Formula

The **Pearson Square Feed Formulation method** is one of the easiest and most reliable ways for small-scale fish farmers to create balanced and cost-effective feed for **Tilapia and African Catfish**. It is simple, fast, and does not require any advanced math or technical skills. With just a few inputs—protein levels of ingredients and the target requirement—any farmer, even a beginner, can accurately mix high-protein and low-protein ingredients to achieve the right nutrition for healthy, fast-growing fish.

PEARSON SQUARE FEED FORMULATION

Examples for farmers:

High-Protein Item: Fishmeal (55–65%), Soybean Meal (45–48%)

Low-Protein Item: Maize Bran (8–12%), Wheat Pollard (14–17%), Rice Bran (7–12%)

Total Quantity to Mix (kg)

e.g., 100

High Protein Item Name

e.g., Fishmeal, Soybean Meal

High Protein Level (%)

e.g., 55

Low Protein Item Name

e.g., Maize Bran, Rice Bran

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