

1. BACKGROUND

Lunza Aquaculture Field School is one of the 90 Aquaculture field schools in Kakamega County. It comprises of 30 small scale fish farmers comprising of 10 women and 20 men, 4 of which are youths. The aim of AFS was to enable knowledge sharing from the few extension officers who may not reach all the fish farmers with ease, and also to enable farmer to farmer learning. ABDP funded 57 Aquaculture field schools in the County, among them was Lunza AFS, who identified challenge in fish feeding, and experimented on different feeding regimes. Fish feeding is one of the most critical and costly components of aquaculture production systems. In smallholder systems like those in Kakamega County, feed can account for 60–70% of total production costs, making it a key determinant of profitability, growth rates, and overall farm sustainability.

Fish require a balanced diet to:

- ◆ Grow efficiently (weight gain)
- ◆ Maintain health and immunity
- ◆ Reproduce effectively
- ◆ Convert feed into flesh (feed conversion efficiency)

2. PROBLEM STATEMENT

Fish feeding remains one of the biggest constraints to profitable aquaculture, especially among smallholder farmers in Kakamega County. The challenges are not only about feed availability, but also cost, knowledge, quality, and management practices.

“Faced with high feed costs and inefficient feeding practices, Lunza fish farmers experimented with different feeding regimes to identify cost-effective strategies without compromising fish growth.”

Fish feeds takes up to 60% of production cost in aquaculture making it a very expensive venture

3. METHODOLOGY

With support from ABDP extension officers, Lunza fish farmers implemented and compared different feeding approaches, including:

Four feeding regimes were experimented as a participatory transfer development for a period of 26 weeks, under fertilization

Nile tilapia fingerlings were subjected to feeding using;

- ◆ wheat bran;
- ◆ wheat bran and shrimps
- ◆ Fugo tilapia feed
- ◆ groffin feed

The feeds were of same quantity at 10% body weight for the first 4 weeks, 5 % for the next 8 weeks and finally 3% for the rest of the rearing period. Approximate quantity of feeds used were 10kg

Happa nets were stocked with 26 fish each sourced from Beda Fish Farm, Matungu Sub County, each fish had 4 grams



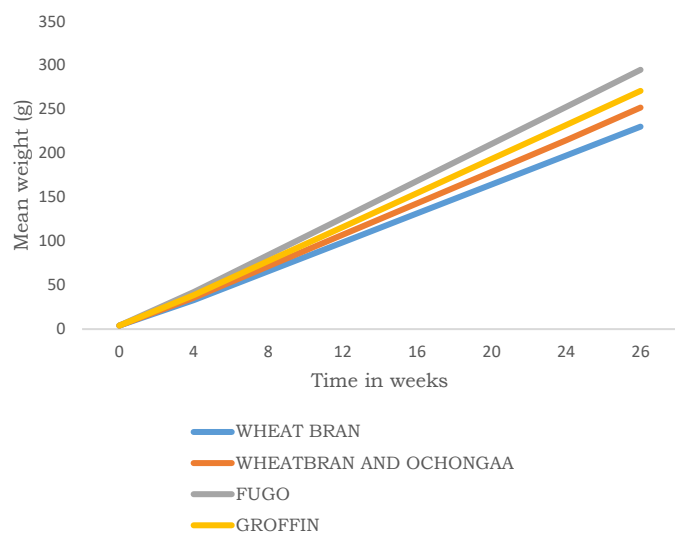
4. Results

Mean weights were computed

HAPPA NET	1	2	3	4
TREATMENT	- Wheat bran	- Wheat bran - Shrimps	- Fugo tilapia feed	- Groffin
AVERAGE WEIGHT	230 grams	252 grams	295 grams	271 grams
Yield	6kg	6.5kg	7.6kg	7kg
Value of fish	2160	2,340	2,736	2,520
Feed cost	400	700	1,461	1,200
MARGIN	1,760	1,640	1,275	1,320

Pond	Weight (g) MEAN ± SD
Wheat bran	124.779±65.148 ^a
Wheat bran and shrimps	135.949±71.169 ^{ab}
Groffin	146.789±76.650 ^{bc}
Fugo	159.827±83.410 ^c
F-value	6.653
P-Value	0.0001

Mean weights of Nile tilapia reared using different feeds



This study yielded the following key outcomes;

- ♦ Feed costs reduced by 25–40%
- ♦ Improved feed utilization and lower wastage
- ♦ Fish growth rates maintained or improved despite reduced feed costs

5. Integrated farming practices

Farmers were taken through various farming practices that can be done hand in hand with aquaculture to supplement their food sources and also act a source of passive income. Some of the practices include;

- ♦ Beekeeping
- ♦ Tree nursery
- ♦ Horticulture (African leafy vegetables, kales, pumpkins)
- ♦ Sugarcane

6. Key lessons learnt

- ♦ Feeding based on fish size improves growth and reduces waste
- ♦ Natural pond productivity can supplement feed requirements
- ♦ Record keeping enables informed decision-making
- ♦ Farmer-to-farmer learning accelerates adoption of best practices
- ♦ Aquaculture Field Schools have great potential in handling on farm trials of research findings, to enable farmers put into use research results as they are influenced to adopt from their own observations, rather than paper discussions
- ♦ Despite significant growth of fish from fugo feed, farmers can still use cheaper brands with pond fertilization instead of abandoning ponds due to high cost of feeds

7. Recommendations

Based on the findings, the following actions are recommended:

For Farmers

- ♦ Adopt weight-based feeding regimes
- ♦ Use feeding trays to monitor consumption
- ♦ Integrate locally available feed ingredients
- ♦ Maintain proper feeding schedules and records

For Government and Development Partners

- ♦ Strengthen farmer training on feed management
- ♦ Support local feed production initiatives
- ♦ Promote demonstration farms for learning
- ♦ Improve access to affordable, quality feeds

For Scaling

- ♦ Circulate the Lunza model across Kakamega County
- ♦ Integrate feeding regime optimization into aquaculture extension programs
- ♦ Support farmer groups to conduct participatory trials

8. Conclusion

The Lunza fish farmers' experience demonstrates that reducing feed costs in aquaculture is achievable through knowledge, innovation, and practical experiment. By adopting smarter feeding strategies, smallholder farmers can significantly improve profitability without compromising productivity.

