Table 1: Effect of quality fish feed on fish performance

<table>
<thead>
<tr>
<th>Feed type</th>
<th>Price of a kg of feed</th>
<th>Amount of feed (kg) to produce 1 kg of fish</th>
<th>Money spent on feed to produce 1 kg of fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good quality /commercial feed</td>
<td>950</td>
<td>2</td>
<td>1,900/-</td>
</tr>
<tr>
<td>Low quality, cheap feed</td>
<td>750</td>
<td>4.5</td>
<td>3,375/-</td>
</tr>
</tbody>
</table>

Therefore, it is important to supply the exact amount of feed needed by the fish and avoid wastage

A good quality feed that is poorly administered is not better than a poor quality one

How to deal with overfeeding
The signs of overfeeding include the pond water turning very green. Eventually stressed fish is seen coming to the surface and gasping for air, especially at night and early morning. When these signs are observed, farmers should flush more water through the pond to dilute the effects of pollution until the green colour of the pond water is greatly reduced.

Proper fish feeding
Just as it is important not to supply excess feed, it is also important not to underfeed the fish. Therefore, farmers should seek guidance on the right amount of feed to be fed to their fish daily.

Feeding charts are available at the aquaculture research and development center to guide farmers on the amount of feed to give different fish species and age groups.

For more information, contact:
The Aquaculture Research and Development Centre, Kajjansi
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Under such conditions, the fish gets stressed and stops eating. In extreme cases the fish dies.
Introduction
Fish need to be provided enough nutritious food in order to attain big sizes in a short period of time under culture conditions.

There are two main types of fish feeds.
A) Natural food
B) Artificial feeds

A) Natural Food
Natural food can be stimulated to develop in a pond through pond fertilisation. A fertilised pond will have tiny plants (phytoplankton) and animals (zooplankton) that can only be seen under a microscope. (Figure 1).

Locally available ingredients such as fish meal, soya, maize and wheat are some ingredients that provide the nutrients listed above.

Figure 1: Microscopic plants and animals as seen under a microscope

B) Artificial Feeds
Artificial feeds are those feeds prepared and given to fish. The nutrients in these feeds should be well balanced to meet the nutritional needs of the cultured fish species. The nutrients that should be included in fish feeds include:

- Protein for body building
- Fat for normal functioning of the body and for energy
- Carbohydrates for energy
- Mineral salts for bone structure and body functions
- Vitamins for good health

Locally available ingredients such as fish meal, soya, maize and wheat are some ingredients that provide the nutrients listed above.

There are two sources of artificial feeds.

i) On farm made feed
They are made on the farm by mixing ingredients into powder or dough which is fed directly to the fish or cooked prior to feeding. However, in Uganda, on-farm made feeds have been found to lack some of the nutrients necessary for fast fish growth. Therefore, it is advisable to use them as supplementary feed along with pond fertilisation.

It is also recommended that farmers seek advice on how to formulate feeds from competent persons.

ii) Factory-based fish feed
This type of feeds are prepared by commercial producers and sold to farmers.

Figure 2: (A) Sinking pellets (B) Floating pellets

Economic considerations
The cost of feeds is the highest cost of production in commercial fish farming. It ranges from 40% to 60% of the total cost of production. Being the highest cost, a lot of care is needed to minimise over expenditure on feeds as much as possible in order to avoid loss of profit.

The two most important ways by which fish farmers may lose money in fish feeds are:

i) When the feed is of poor quality
When a feed lacks or contains certain important nutrients (especially protein for body building) only in small quantities, fish does not grow well. It has to eat a lot more feed in order to make little growth. Even if the price of such a feed is low, the farmer spends more money on the feed for each gain of 1 kg