

# **Feeding devices and Methods**

# Introduction

- In fish and shellfish farming, feed accounts for more than 60% of the operational cost and thus different feeding methods can be adopted to avoid wastage of feed.
- The widespread availability of durable dry feeds and rapid advances in control technology has led to the introduction of numerous types of automated systems for delivering fish feeds.
- Options for fish farmers range from traditional hand feeding methods to the use of automatic, computer- controlled systems.
- The first choice by fish farmers is whether to feed fish by hand or whether to use labour-saving mechanical or automatic systems.
- This decision is based on labour cost, scale of farm operation, species being farmed, types of holding system, hatchery or grow out operation etc.

# Feeding Methods

- Cultured fish may be fed by one of two ways
  1. By broadcasting or hand feeding or manual feeding
  2. By feeders (mechanized)

## • **Hand feeding**

- Hand feeding refers to distribution of feed by hand which allows close observation of the appetite and feeding behaviour of cultured fish species, which feed actively at the surface and grow in clear water systems.
- Effective hand feeding necessitates some initial training and experience if food wastage is to be avoided.
- Dry pellets, granules and crumbles for fish could be broadcasted.
- For small ponds (less than 0.50 ha), broadcasting is quite adequate.
- For larger ponds, broadcasting should be supplemented by distribution in slightly interior areas using a small boat.

- Moist or semi moist should not be broadcasted; but, kept in earthen pot or plastic trays; placed in the peripheral areas of the pond bottom.
- The adequate number of feeding trays required is 30-40/ha to create maximum opportunities for fish

- **Advantages:** Behaviour of fish is regularly observed
- **Disadvantages:**
  - Labour intensive
  - More time consuming
  - Limited in application on large farms

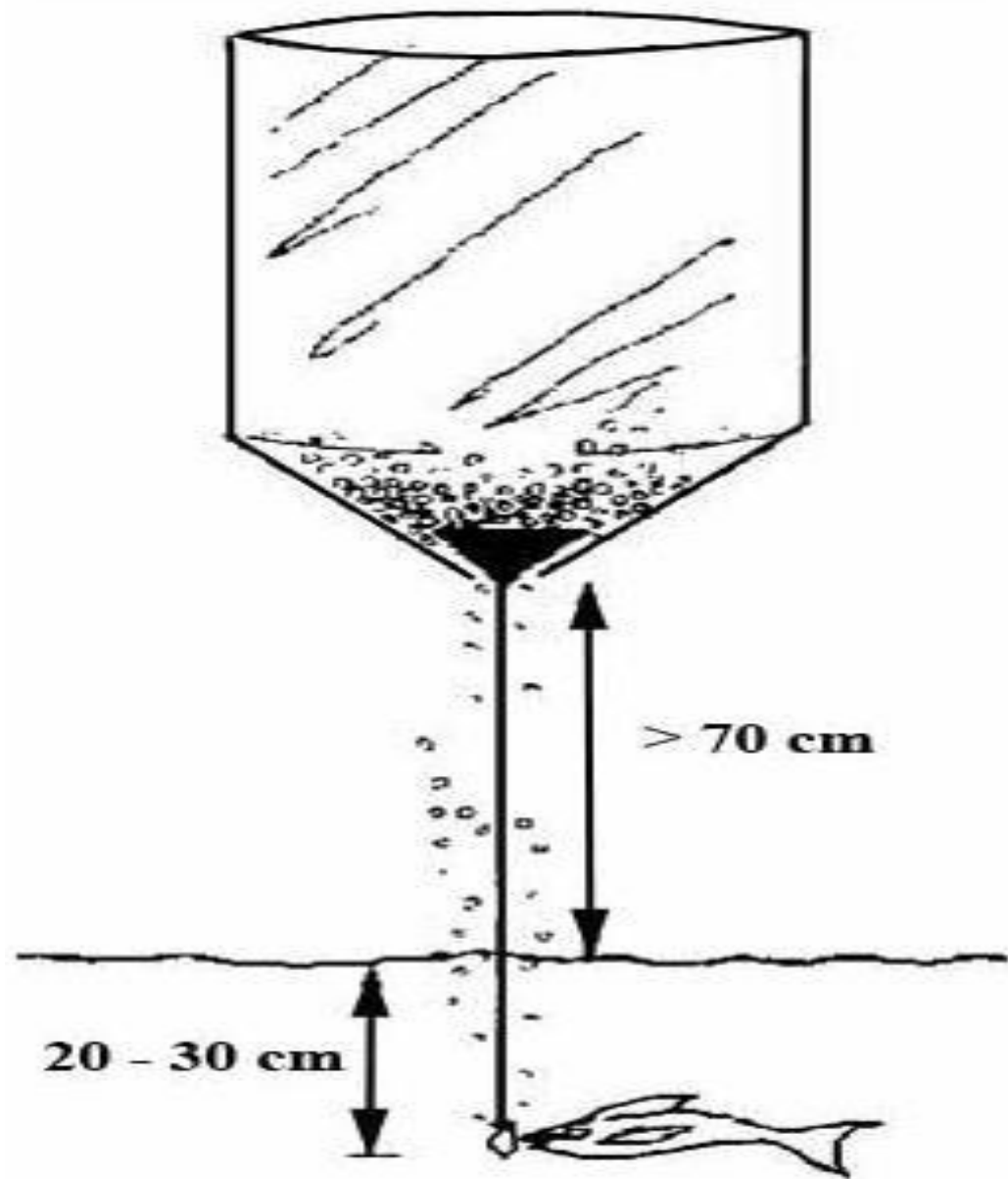
# Mechanized feeding

- At present, there are different types of feeding equipments being used. Fish feeders can be divided into two major groups, as follows:
  - (a) Stationary feeding equipment
    - (i) without supplied energy - Example: demand feeders
    - (ii) with supplied energy -Example: automatic feeders (electric, pneumatic, hydraulic)
  - (b) Mobile feeding equipment
    - (i) feeding carts
    - (ii) feeding boats

# Demand feeder

- There are different varieties of demand feeders but their general principle is the same.
- Demand feeders are controlled by the fish themselves according to their appetite.
- Some species of fish learn very rapidly to use demand feeders but they are usually unsuitable for small fish which are unable to operate them.
- The fish touch the rod connected to a plug or plate in the bottom of the feed hopper.
- This plug normally closes the hopper so that feed does not fall out. When moved by the movement of the bait rod, a small quantity of feed is released.
- The quantity of feed released on each occasion can be controlled by the shape and design of the plug. The plug is usually ball shaped or an inverted cone.

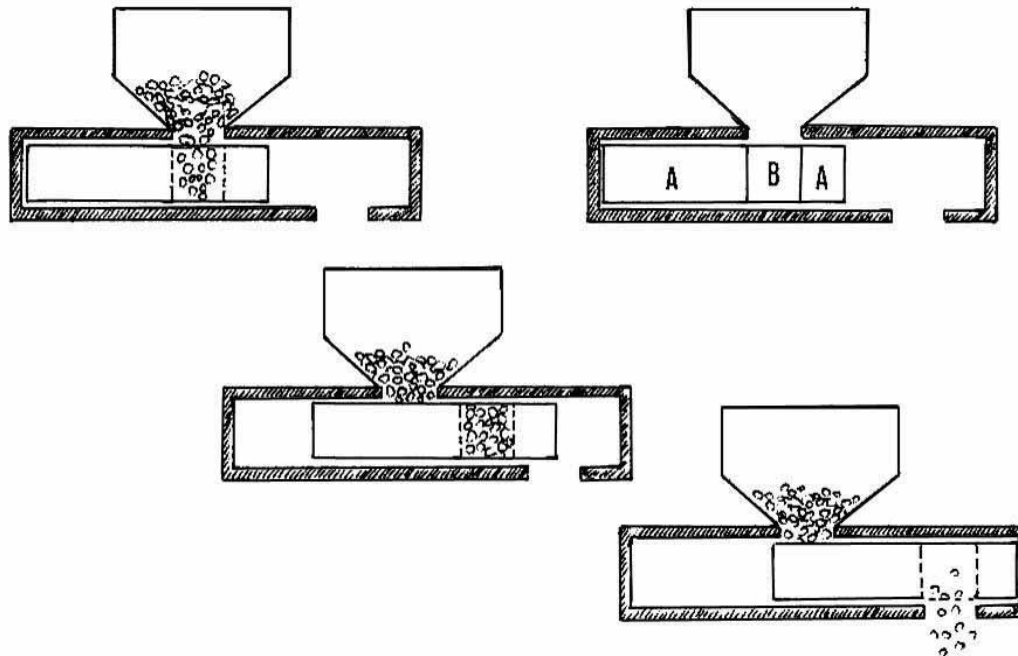




# Electrically operated automatic feeders

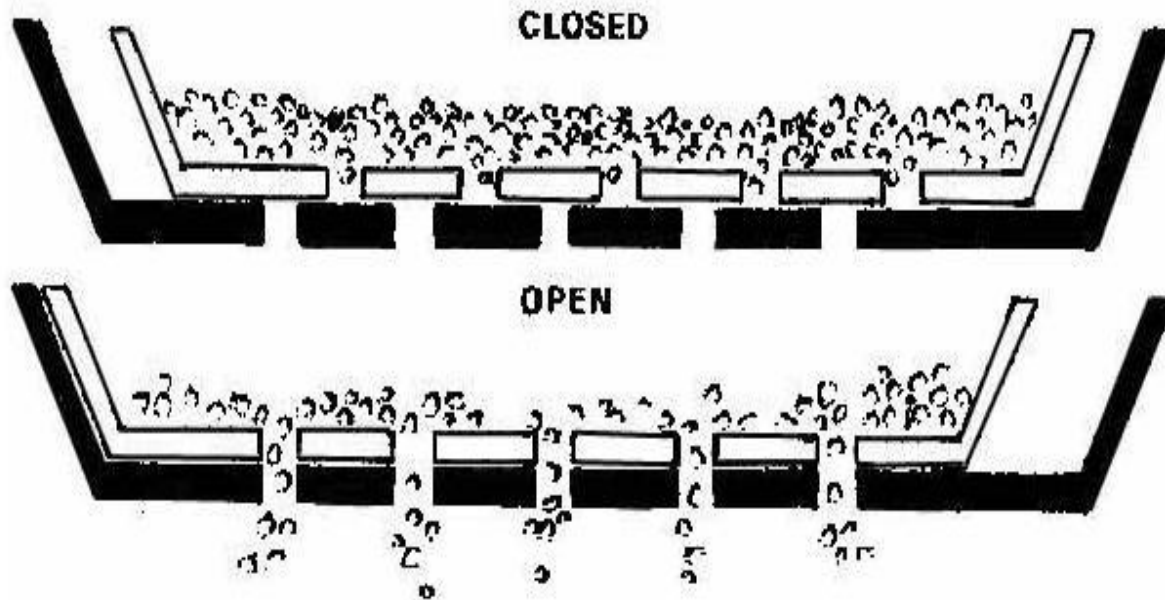
## Model-1

Movement of the slug 'A' is controlled by an electro-magnet. The space 'B' governs the amount of feed released at each movement of 'A'.



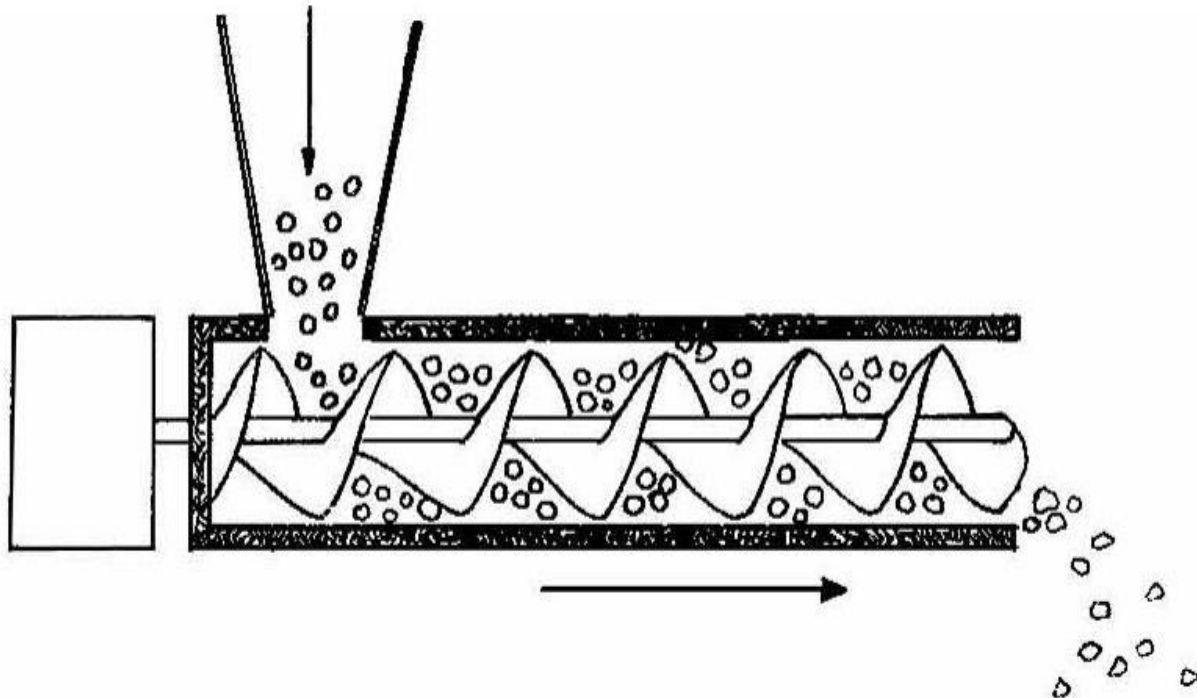
- **Model - 2**

The feed trough consists of two parts, one inside the other. The movement of the inner one is controlled by an electromagnet. When the holes in the two parts of the feeder coincide, the feed falls through



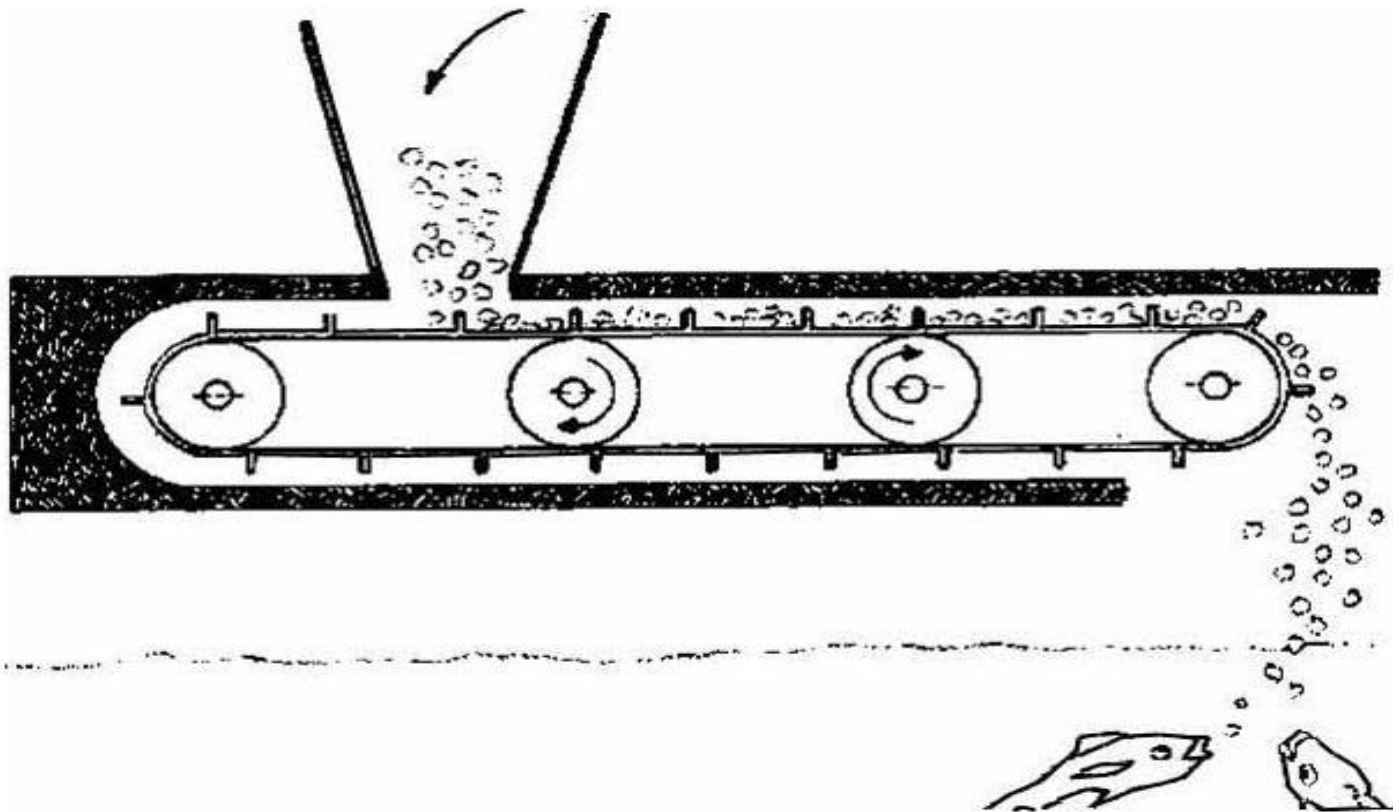
- **Model – 3**

- An endless screw mechanism transfers the feed from the hopper to the outlet. The amount of feed released depends on the number of revolutions of the motor drive screw, which is controlled by a timer as is the periodicity of feeding



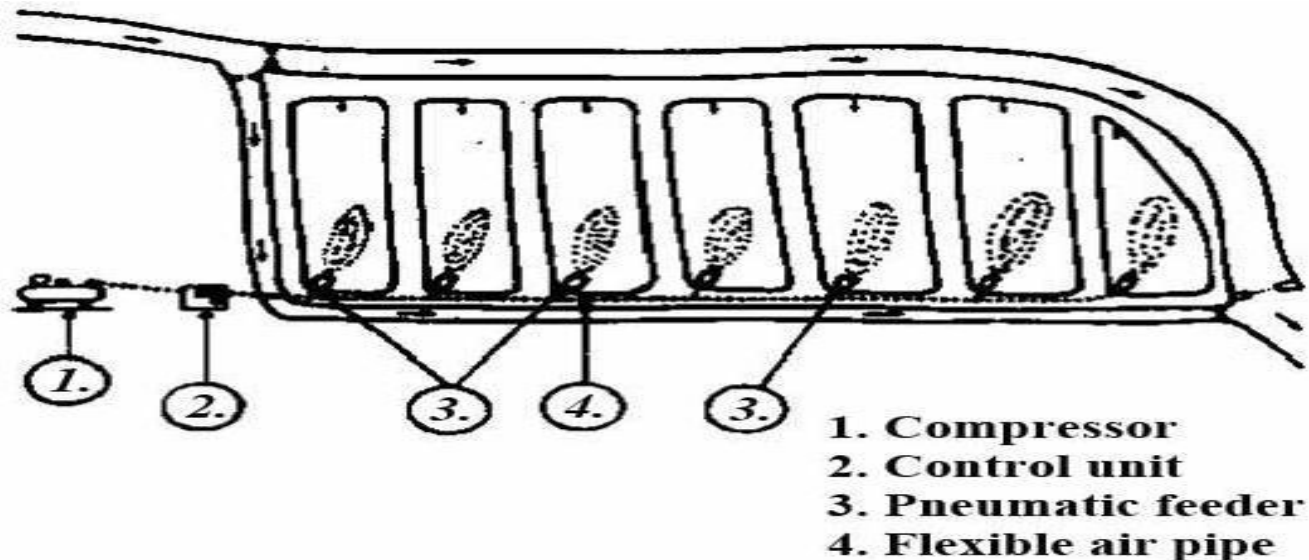
- **Model - 4**

- This is similar to the above except that a blower is added, which distributes the feed over a greater distance



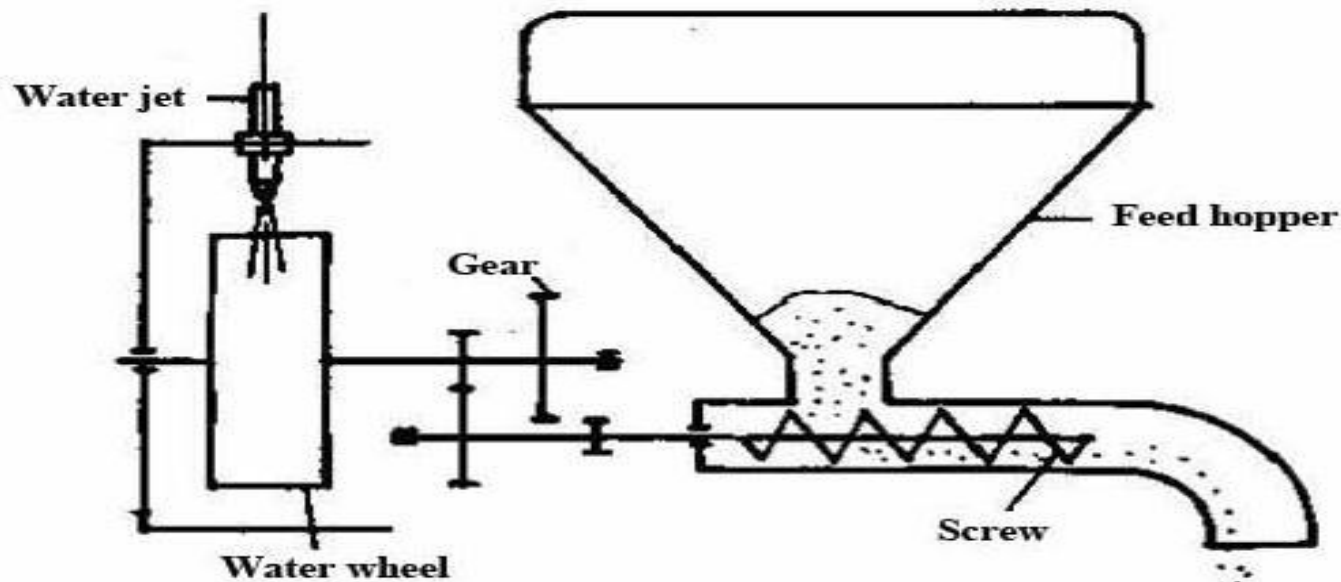
# Pneumatic-type automatic feeders

- These feeders shoot the feed by means of compressed air, spreading it over the water surface. The compressed air supply of the feeders is usually ensured by a central air supplying system, but the feeders can be controlled by a separate electric system centrally, or individually as well.



# Hydraulic-type automatic feeders

- These feeders can be used on farms where electric energy supply is not available, but works using continuous water flow on a water wheel which powers the system to function. The feed discharging screw is driven by this water wheel and the rate of feed dispensing can be adjusted by changing the gear drive. This system can also be applied for distributing wet food like chopped trash fish, etc.



# Feeding carts

- Feeding carts can be used efficiently in intensive fish farming with centralized pond systems connected via suitable roads. Their operation is not automatic (unlike the stationary feeders) but fully controlled by the operator. The feeding carts can be self-propelled or tractor pulled. The feed is blown into the fish pond by a turbo blower.



# Feeding boats

- In fish farms having large ponds, feeding boats can be used efficiently. There is a longitudinal slot in the bottom of these boats through which the feed grain is washed out by water current during the movement of the boat.

# Feeding devices for wet or moist feeds

- Moist feeds can also be transferred to large cages and ponds more effectively than it can be fed by hand, by using a mechanical 'thrower'. This is simply a centrifugal fan into which the feed is dropped.

